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## **Sustainability and Land Use Planning: Greening State and Local Land Use Plans and Regulations to Address Climate Change Challenges and Preserve Resources for Future Generations**

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# **SUSTAINABILITY AND LAND USE PLANNING: GREENING STATE AND LOCAL LAND USE PLANS AND REGULATIONS TO ADDRESS CLIMATE CHANGE CHALLENGES AND PRESERVE RESOURCES FOR FUTURE GENERATIONS**

PATRICIA E. SALKIN\*

## **INTRODUCTION**

The threats of climate change have become strikingly apparent in recent years. The U.N. Intergovernmental Panel on Climate Change concluded in its 2007 Assessment Report on climate change that “[w]arming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice and rising global average sea level.”<sup>1</sup> In 2008, a report produced by the U.S. Environmental Protection Agency concluded that “there are changes in extreme conditions, such as an increased frequency of heavy rainfall (with some increase in flooding), more heat waves, fewer very cold days, and an increase in areas affected by drought.”<sup>2</sup> The report also predicts that: heat-related deaths will increase in the coming years, air quality will worsen in urban areas contributing to the prevalence of cardiovascular and pulmonary diseases, and changing weather patterns will affect the water supply leading to more floods, droughts, and wildfires.<sup>3</sup> The effects of climate change have already begun to appear. Small

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<sup>1</sup> U.N. INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2007: SYNTHESIS REPORT 30 (2007), *available at* [http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4\\_syr.pdf](http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr.pdf).

<sup>2</sup> JANET L. GAMBLE ET AL., ANALYSES OF THE EFFECTS OF GLOBAL CHANGE ON HUMAN HEALTH AND WELFARE AND HUMAN SYSTEMS: FINAL REPORT, SYNTHESIS AND ASSESSMENT PRODUCT 4.6 ES-4 (U.S. Climate Change Science Program and the Subcommittee on Global Change Research 2008), *available at* <http://www.climatechange.gov/Library/sap/sap4-6/final-report/sap4-6-final-all.pdf>.

<sup>3</sup> *Id.* at ES-5 to ES-7.

native villages along the coast of Alaska have had to be relocated in the past few years, as the permafrost has begun to melt and wash away into the sea.<sup>4</sup> Shrinking winter snow falls and unusually intense droughts have led to squabbles among the states for water rights,<sup>5</sup> and the polar bear was listed as a threatened species in 2008 due to the increasing shrinking of its sea ice habitat.<sup>6</sup>

Consensus has been reached that greenhouse gas emissions must be decreased without delay in order to have any chance of forestalling global warming. As of August 26, 2009, eighty-four countries have signed onto the Kyoto Protocol, thereby committing in principle to reduce their emissions.<sup>7</sup> Even though the United States has neither ratified the agreement nor worked proactively with the international community to craft solutions to global climate change,<sup>8</sup> state and local governments across the country have stepped in to take the lead in developing emissions reductions strategies. At the close of 2008, most of the states had taken some step

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<sup>4</sup> William Yardley, *Victim of Climate Change, a Town Seeks a Lifeline*, N.Y. TIMES, May 27, 2007, available at [http://www.nytimes.com/2007/05/27/us/27newtok.html?\\_r=1&scp=1&sq=newtok&st=nyt](http://www.nytimes.com/2007/05/27/us/27newtok.html?_r=1&scp=1&sq=newtok&st=nyt).

<sup>5</sup> See, e.g., Randal C. Archibold & Kirk Johnson, *An Arid West No Longer Waits for Rain*, N.Y. TIMES, April 4, 2007, available at <http://www.nytimes.com/2007/04/04/us/04drought.html>; see also Brenda Goodman, *Drought-Stricken South Facing Tough Choices*, N.Y. TIMES, Oct. 16, 2007, available at <http://www.nytimes.com/2007/10/16/us/16drought.html>.

<sup>6</sup> See Fish and Wildlife Services Endangered and Threatened Wildlife and Plants, 73 Fed. Reg. 28212 (May 15, 2008) (to be codified at 50 C.F.R. pt. 17). Efforts are underway by environmental groups to secure the listing of a number of other species threatened by global warming, including the Pacific walrus and American pika. See Press Release, Center for Biological Diversity, Center for Biological Diversity Files Lawsuit to Protect Pacific Walrus Under Endangered Species Act (Dec. 3, 2008), available at [http://www.biologicaldiversity.org/news/press\\_releases/2008/pacific-walrus-12-03-2008.html](http://www.biologicaldiversity.org/news/press_releases/2008/pacific-walrus-12-03-2008.html); Press Release, Center for Biological Diversity, Alpine 'Boulder Bunny' Imperiled by Global Warming (Aug. 19, 2008), available at [http://www.biologicaldiversity.org/news/press\\_releases/2008/american-pika-08-19-2008.html](http://www.biologicaldiversity.org/news/press_releases/2008/american-pika-08-19-2008.html); see also J.B. Ruhl, *Climate Change and the Endangered Species Act: Building Bridges to the No-Analog Future*, 88 B.U. L. REV. 1, 11 (2008).

<sup>7</sup> Kyoto Protocol to the United Nations Framework Convention on Climate Change, Dec. 10, 1997, 37 I.L.M. 22 (1998), available at <http://unfccc.int/resource/docs/convkp/kpeng.html>; U.N. FRAMEWORK CONVENTION ON CLIMATE CHANGE, KYOTO PROTOCOL: STATUS OF RATIFICATION (2009), available at [http://unfccc.int/files/kyoto\\_protocol/status\\_of\\_ratification/application/pdf/kp\\_ratification\\_20090826corr.pdf](http://unfccc.int/files/kyoto_protocol/status_of_ratification/application/pdf/kp_ratification_20090826corr.pdf).

<sup>8</sup> U.N. FRAMEWORK CONVENTION ON CLIMATE CHANGE, *supra* note 7 (indicating that the United States has not ratified the treaty); Editorial, *Disappointments on Climate Change*, N.Y. TIMES, Dec. 17, 2007, available at <http://www.nytimes.com/2007/12/17/opinion/17mon1.html>; Committee Report: White House Engaged in Systematic Effort to Manipulate Climate Change Science, <http://oversight.house.gov/story.asp?id=1653> (summarizing the full report).

toward curbing emissions, such as through climate change action plans or emissions reductions targets,<sup>9</sup> and more than 900 mayors had signed onto the U.S. Mayors Climate Protection Agreement.<sup>10</sup>

Although a coordinated national policy on climate change should be developed, initiatives at the state and local government level, even standing alone, have the potential to dramatically contribute to the international effort to slow the pace of global warming.<sup>11</sup> This is especially apparent in the context of state and local land use and planning policies, which promote the growth of ecological building projects,<sup>12</sup> permit the development of renewable energy resources,<sup>13</sup> preserve critical areas of habitat and farmland,<sup>14</sup> and reduce driving and auto emissions by planning for urban patterns of development.<sup>15</sup> State and local governments can also provide persuasive incentives for residents and organizations to adopt many different kinds of sustainable practices.<sup>16</sup>

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<sup>9</sup> See Pew Center on Global Climate Change, U.S. States & Regions, <http://www.pewclimate.org/states-regions> (last visited Oct. 28, 2009) ("States and regions across the country are adopting climate policies . . ."); U.S. Environmental Protection Agency, State Climate Actions, <http://www.epa.gov/climatechange/wycd/stateandlocalgov/state.html> (last visited Oct. 28, 2009) ("Action at the state level is a key component of the U.S. response to climate change.").

<sup>10</sup> Mayors Climate Protection Center, List of Participating Mayors, <http://www.usmayors.org/climateprotection/list.asp> (last visited Oct. 28, 2009).

<sup>11</sup> TIMOTHY BEATLEY, *GREEN URBANISM: LEARNING FROM EUROPEAN CITIES* 3–9 (Island Press 2000).

Because so many of the problems and solutions being addressed by Agenda 21 have their roots in local activities, the participation and cooperation of local authorities will be a determining factor in fulfilling its objectives. Local authorities construct, operate and maintain economic, social and environmental infrastructure, oversee planning processes, establish local environmental policies and regulations, and assist in implementing national and subnational environmental policies. As the level of governance closest to the people, they play a vital role in educating, mobilizing and responding to the public to promote sustainable development.

U.N. DEPT OF ECON. & SOC. AFFAIRS, *AGENDA 21: EARTH SUMMIT—THE UNITED NATIONS PROGRAMME OF ACTION FROM RIO* ch. 28.1 (1993), available at <http://www.un.org/esa/sustdev/documents/agenda21/english/agenda21chapter28.htm>. See also Edna Sussman, *Reshaping Municipal and County Laws to Foster Green Building, Energy Efficiency, and Renewable Energy*, 16 N.Y.U. ENVTL. L.J. 1, 2–3 (2008) (arguing that municipal actions to curb emissions are essential to the task of slowing climate change).

<sup>12</sup> BEATLEY, *supra* note 11, at 290–307.

<sup>13</sup> *Id.* at 258–68.

<sup>14</sup> *Id.* at 58.

<sup>15</sup> *Id.* at 109–11.

<sup>16</sup> *Id.* at 345–49.

The majority of efforts to mitigate the various causes and impacts of global warming have been formed under the guise of sustainability. The term “sustainability” was first used by environmentalists in the 1970s, and it gained its popular meaning in 1987,<sup>17</sup> when the United Nations recommended sustainable development as a solution to conflicts between the demands of economic growth and environmental preservation.<sup>18</sup> The concept of sustainability was tied to the idea of equity between and among generations, for development to be sustainable it was argued that it must both preserve resources for future generations as well as distribute them fairly among members of this one.<sup>19</sup> The rhetoric of sustainability quickly became popular, and was adopted by both environmentalists and proponents of economic growth alike. But sustainability also came under criticism as a meaningless concept, as Simon Dresner explains:

Some environmentalists have claimed that sustainable development is a contradiction in terms, and can be used merely as a cover for continuing to destroy the natural world. On the other side of the debate, some economists have argued that sustainable development is too cautious about the future, potentially leading to sacrifices of economic growth for the sake of excessive concern about natural resources. Defenders of the concept argue that disagreement about sustainable development does not show that it is meaningless. Rather, it is a ‘contestable concept’ like liberty or justice. Most people support these goals but disagree about exactly what constitutes liberty or justice.<sup>20</sup>

The following discussion is one about sustainability in this broad sense and context as described by Dresner. State and local governments across the nation have embraced the rhetoric of sustainability in their struggles to respond to climate change. However, although the governments may agree on the core meaning of sustainability, they have developed a multitude of responses. Some focus on environmental preservation and immediate emission reductions; others see the answers to climate change in the development of green collar industries; yet others emphasize the need for social equity and environmental justice. The goal of this article

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<sup>17</sup> SIMON DRESNER, *THE PRINCIPLES OF SUSTAINABILITY* 1 (Earthscan Pubs. Ltd. 2009) (2006).

<sup>18</sup> *Id.*

<sup>19</sup> *Id.* at 1–2.

<sup>20</sup> *Id.* at 2.



is not to elevate one vision of sustainability over another; it is, rather, to admire the breadth of variety in approaches to sustainability. Only with this diversity of thought will solutions to the problems of climate change, certainly one of the largest and most complex threats to ever face the human species, become apparent.

## I. ADDRESSING SUSTAINABILITY THROUGH THE COMPREHENSIVE PLAN

Most state statutes require that zoning regulations be developed and implemented in accordance with a comprehensive land use plan, sometimes called a “general plan” or “master plan.” Typically, a comprehensive plan represents an articulation of the shared vision for the future growth and development of a municipality.<sup>21</sup> Comprehensive plans often address issues relevant to future growth through elements concerning housing, public infrastructure needs, recreational facilities, transportation, economic development, open space, and agriculture.<sup>22</sup> Some of these elements are required to be included in local plans under state enabling acts, while others are optional or are independently developed by local governments.<sup>23</sup> This section focuses on how states have amended their comprehensive planning enabling statutes to encourage sustainable planning techniques, either through direct mandates or through optional elements, and how local governments have included these considerations in their respective plans.

### A. *State Policies*

#### 1. Comprehensive Plan Energy Elements

The most direct way for states to encourage comprehensive planning that focuses on sustainability is to include language in their enabling statutes that expressly requires the consideration of energy conservation

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<sup>21</sup> AM. PLANNING ASS'N, GROWING SMART LEGISLATIVE GUIDEBOOK: MODEL STATUTES FOR PLANNING AND THE MANAGEMENT OF CHANGE 7-76 (Stuart Meck ed., 2002), *available at* <http://www.planning.org/growingsmart/guidebook/index.htm> [hereinafter LEGISLATIVE GUIDEBOOK] (The purpose of the local comprehensive plan is to direct coordinated, efficient, and orderly development of the local government and its environs that will, based on an analysis of present and future needs, best promote the public health, safety, morals, and general welfare); *id.* at 7-69.

<sup>22</sup> *Id.* at 7-69 to 7-74.

<sup>23</sup> *Id.* at 7-74 to 7-76.

and emission reductions. In 2008, Florida took this approach with an amendment to its enabling act that requires local comprehensive plans to consider methods of discouraging urban sprawl, supporting energy-efficient development patterns, and reducing greenhouse gases.<sup>24</sup> The law also mandates local governments to address “transportation strategies to address reduction in greenhouse gas emissions from the transportation sector,”<sup>25</sup> and to consider energy conservation under its natural resources element.<sup>26</sup>

Since 2007, Arizona’s larger cities and counties have also been required to prepare an energy element as part of their comprehensive plans.<sup>27</sup> This element must describe incentives and other strategies to encourage the efficient use of energy and the growth of renewable energy use.<sup>28</sup> And Colorado municipalities are advised to include in their comprehensive plans strategies for ensuring “access to appropriate conditions for solar, wind, or other alternative energy sources[.]”<sup>29</sup> Pennsylvania’s enabling statute also suggests that municipalities include an energy conservation element in their comprehensive plans.<sup>30</sup> The statute explains that this element should assess current and future energy needs and develop strategies “to reduce energy consumption and to promote the effective utilization of renewable energy sources.”<sup>31</sup>

New Jersey also recently amended its comprehensive planning laws to authorize local governments to incorporate sustainability measures in their comprehensive plans, but did so in a slightly different way. The state’s 2008 amendment directs local governments to develop green building and sustainability policies and strategies in order to:

provide for, encourage, and promote the efficient use of natural resources and the installation and usage of renewable energy systems; consider the impact of buildings on the local, regional and global environment; allow ecosystems

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<sup>24</sup> FLA. STAT. ANN. § 163.3177(6)(a) (West 2009).

<sup>25</sup> *Id.* § 163.3177(6)(b).

<sup>26</sup> *Id.* § 163.3177(6)(d).

<sup>27</sup> ARIZ. REV. STAT. ANN. § 11-821(c)(4) (2007).

<sup>28</sup> *Id.* (counties with over 125,000 people); ARIZ. REV. STAT. ANN. § 9-461.05(e)(10) (2007) (cities with over 50,000 people).

<sup>29</sup> COLO. REV. STAT. § 30-28-106(3)(a)(VI) (2008) (counties); COLO. REV. STAT. § 31-23-206(1)(f) (2008) (cities and towns).

<sup>30</sup> 53 PA. CON. STAT. § 10301.1 (2009).

<sup>31</sup> *Id.*

to function naturally; conserve and reuse water; treat storm water on-site; and optimize climatic conditions through site orientation and design.<sup>32</sup>

## 2. Comprehensive Plan Conservation Elements

States can effectively influence or mandate local governments to include environmental concerns, including climate change, in their comprehensive plans by providing statutory guidance for crafting conservation elements. These elements usually focus on the preservation and protection of environmental resources, such as air, water, habitat, and wildlife.<sup>33</sup> Conserving these environmental resources is important to achieve sustainability, as critical environmental areas contain valuable carbon sinks and critical habitats that provide valuable ecosystem services.<sup>34</sup> Protecting them from development, moreover, saves resources and energy that would otherwise be necessary to build them up.

California's mandatory conservation element is typical of many. The statute explains that the element should cover "the conservation, development, and utilization of natural resources including water and its hydraulic force, forests, soils, rivers and other waters, harbors, fisheries, wildlife, minerals, and other natural resources."<sup>35</sup> Additionally, the statute suggests that the conservation element can be used to discuss strategies for reducing water pollution, shoreline erosion, and flood management.<sup>36</sup> Other states, like Wisconsin have a conservation element that slightly differs by focusing on the protection of historical and cultural resources

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<sup>32</sup> N.J. STAT. ANN. § 40:55D-28(b)(16) (2009).

<sup>33</sup> Measuring Land Preservation in Virginia, Land Preservation, <http://vaperforms.virginia.gov/indicators/naturalResources/landPreservation.php> (last visited Oct. 28, 2009).

<sup>34</sup> "Ecosystem services" are benefits provided by natural habitats that are costly or impossible to achieve artificially, such as air and water purification, renewal of soil fertility, food production, detoxification and decomposition of wastes, climate regulation, disease and pest control, and aesthetic and cultural enrichment. See James Salzman et al., *Protecting Ecosystem Services: Science, Economics, and Law*, 20 STAN. ENVTL. L.J. 309, 310 (2001). In recent years, environmentalists have attempted to value ecosystem services, so that they can be factored more appropriately into the cost-benefit analyses of actions affecting the environment. *Id.* at 309–12; MILLENNIUM ECOSYSTEM ASSESSMENT, LIVING BEYOND OUR MEANS: NATURAL ASSETS AND HUMAN WELL-BEING 3, 5 (2005), available at <http://www.millenniumassessment.org/documents/document.429.aspx.pdf>.

<sup>35</sup> CAL. GOV'T. CODE § 65302(d) (West Supp. 2009).

<sup>36</sup> *Id.* See also ARIZ. REV. STAT. ANN. § 9-461.05(E)(1)(b)–(c), (e) (2007) (requiring cities with populations larger than 50,000 to include conservation elements); ARIZ. REV. STAT. ANN. § 11-821(D)(3) (2007) (requiring counties with populations larger than 200,000); NEV. REV. STAT. ANN. § 278.160 (1)(b) (West 2009) (suggesting the inclusion of a conservation element).



in addition to important environmental resources.<sup>37</sup> The Wisconsin conservation element specifically includes the conservation of forest areas, agricultural lands, and endangered species.<sup>38</sup> South Carolina's statute emphasizes the protection of agricultural and forest land, in addition to coastal resources, habitat, and soil types,<sup>39</sup> and in Nevada, counties with populations of more than 400,000 are directed to prepare "rural neighborhoods preservation plans."<sup>40</sup>

New Jersey similarly recommends that local governments incorporate farmland preservation in their comprehensive plans.<sup>41</sup> But New Jersey's enabling act stands out because it also encourages local governments to include plans for transfer of development rights programs,<sup>42</sup> and it suggests that energy conservation, as well as other natural resources, should be considered within the scope of the conservation element.<sup>43</sup>

Numerous states have also developed critical areas legislation to protect special areas of environmental, historical, or cultural significance,<sup>44</sup> and comprehensive plans in these states may be required to prepare critical areas elements, either separately from or in conjunction with the conservation element. In Florida, coastal cities must, in addition to assessing a conservation element, include a coastal management element that discusses such objectives as enhancing coastal environments, preserving species diversity, avoiding permanent losses of coastal resources, and protecting people from natural disasters.<sup>45</sup> Coastal municipalities in

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<sup>37</sup> WIS. STAT. § 66.1001(2)(e) (2009). *See also* MASS. GEN. LAWS ANN. ch. 41, § 81D(5) (West 2001) (providing that master plans must include a "[n]atural and cultural resources element which provides an inventory of the significant natural, cultural and historic resource areas of the municipality, and policies and strategies for the protection and management of such areas.").

<sup>38</sup> WIS. STAT. § 66.1001(2)(e). *See also* 53 PA. CONS. STAT. ANN. § 10301(6) (West 2008) (mandating the inclusion of a natural resources element to address "wetlands and aquifer recharge zones, woodlands, steep slopes, prime agricultural land, flood plains, unique natural areas and historic sites."); 53 PA. CONS. STAT. ANN. § 10301 (7) (iii) (West 2008) (requiring counties "[i]dentify a plan for the preservation and enhancement of prime agricultural land and encourage the compatibility of land use regulation with existing agricultural operations.").

<sup>39</sup> S.C. CODE ANN. § 6-29-510(D)(3) (2008).

<sup>40</sup> NEV. REV. STAT. § 278.160 (1)(l) (2009).

<sup>41</sup> N.J. STAT. ANN. § 40:55D-28(b)(13) (West Supp. 2009).

<sup>42</sup> N.J. STAT. ANN. § 40:55D-28(b)(14).

<sup>43</sup> N.J. STAT. ANN. § 40:55D-28(b)(8).

<sup>44</sup> *See* LEGISLATIVE GUIDEBOOK, *supra* note 21, at 5-24 to 5-27. *See also id.* at 5-30 to 5-46 (for suggested model legislation to designate "Areas of Critical State Concern.").

<sup>45</sup> FLA. STAT. ANN. § 163.3177(6)(g)(1) (West Supp. 2009).

Connecticut must plan for the “restoration and protection of the ecosystem and habitat of Long Island Sound.”<sup>46</sup> In Maryland, municipalities are required to develop their own sensitive areas elements, which must contain “goals, objectives, principles, policies, and standards designed to protect sensitive areas from the adverse effects of development.”<sup>47</sup>

### 3. Comprehensive Plan Land Use Elements

Traditional zoning concepts and transportation planning in the United States encouraged a separation of land uses and low population density, and this trend was exacerbated after World War II as sprawling development became the norm.<sup>48</sup> This type of development is highly reliant on land consumption and transportation policies that favor personal automobile use over mass transit, bicycling, and walking.<sup>49</sup> As such, it leads to natural resource depletion and high levels of emissions from automobile travel.<sup>50</sup> States can encourage more sustainable planning policies through their enabling acts and the inclusion of land use elements therein.<sup>51</sup>

Florida’s comprehensive planning enabling act specifically rejects policies that support low density, single use, and automobile reliant development by directing local governments to consider methods of discouraging urban sprawl, supporting energy-efficient development patterns, and reducing greenhouse gases through their land use elements.<sup>52</sup> Planning

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<sup>46</sup> CONN. GEN. STAT. § 8-23(d)(2) (2009).

<sup>47</sup> MD. ANN. CODE, art. 66B, § 3.05(a)(4)(ix) (2009).

<sup>48</sup> JAMES HOWARD KUNTSLER, *GEOGRAPHY OF NOWHERE: THE RISE AND DECLINE OF AMERICA’S MAN-MADE LANDSCAPE* 103–12 (Simon & Schuster 1993) (after WWII, suburbanization took the country by storm and led to a dependency on cars).

<sup>49</sup> See JEAN PAUL RODRIGUE ET AL., *THE GEOGRAPHY OF TRANSPORT SYSTEMS* ch. 8, Concept 3 (2d ed. 2009), available at <http://www.people.hofstra.edu/geotrans/eng/ch8en/conc8en/ch8c3en.html>.

<sup>50</sup> See *id.*

<sup>51</sup> LEGISLATIVE GUIDEBOOK, *supra* note 21, at 7-79 (describing the American Law Institute’s Model Land Development Code’s “local land development plan.”).

States can follow the Model Code’s local land development plan to encourage better sustainable policies. The Model Code’s plan must state the goals and objectives for the development of public and private lands within a municipality. *Id.* at 7-79 to 7-80. The plan also directs that the land use element include an inventory of land uses, including, among other things: general zones, historical sights, critical environmental areas, parks, public buildings, business and historical districts, downtown areas, and redevelopment areas. *Id.* at 7-85 to 7-86. The development plan also requires information related to demographics, such as the extent and direction of expected population growth. *Id.* at 7-85.

<sup>52</sup> FLA. STAT. ANN. § 163.3177(6)(a) (West Supp. 2009).

commissions in Connecticut are similarly directed to consider “the objectives of energy-efficient patterns of development [and] the use of solar and other renewable forms of energy and energy conservation . . . .”<sup>53</sup> In addition to solar access, Arizona counties are directed to discuss air quality in their land use elements.<sup>54</sup>

Arizona’s land use element also includes development strategies to curb sprawl. Counties with populations of more than 125,000 must also include, as part of the land use element, “[s]pecific programs and policies that the county may use to promote compact form development activity and locations where those development patterns should be encouraged.”<sup>55</sup> Counties with populations larger than 200,000 must additionally plan for mixed use development in designated growth areas, which are areas that are suited to compact and transit oriented development.<sup>56</sup> Specifically, the statute requires these counties to include policies and strategies intended to “[m]ake automobile, transit and other multimodal circulation more efficient” and “[c]onserve significant natural resources and open areas in the growth area and coordinate their location to similar areas outside the growth area’s boundaries.”<sup>57</sup> Nevada’s enabling act also supports land use planning for mixed use and transit oriented development,<sup>58</sup> as does Connecticut’s.<sup>59</sup>

#### 4. Comprehensive Plan Transportation Elements

Most state enabling statutes require local governments to include a transportation element in their comprehensive plans. As is the case with land use elements, a number of states’ transportation elements have incorporated planning strategies intended to encourage people to drive less, and to walk, bicycle, and use mass transportation more frequently.<sup>60</sup> Arizona’s

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<sup>53</sup> CONN. GEN. STAT. § 8-23(d)(9) (2009).

<sup>54</sup> ARIZ. REV. STAT. ANN. § 11-821(C)(1)(c) (2009).

<sup>55</sup> *Id.* § 11-821(C)(1)(b).

<sup>56</sup> *Id.* § 11-821(D).

<sup>57</sup> *Id.* § 11-821(D)(2).

<sup>58</sup> NEV. REV. STAT. § 278.160(1)(f)(1)(I) (2009).

<sup>59</sup> CONN. GEN. STAT. § 8-23(d)(1) (2009).

<sup>60</sup> *See, e.g.*, MD. ANN. CODE art. 66B, § 3.05(a)(4)(iii)(2) (2009) (requiring the comprehensive plan to contain a transportation element that must “[p]rovide for bicycle and pedestrian access and travelways”); S.C. CODE ANN. § 6-29-510(D)(8) (2009) (requiring “a transportation element that considers transportation facilities, including . . . pedestrian and bicycle projects . . . .”); WASH. REV. CODE § 36.70A.070(6)(a)(vii) (2009) (requiring, as an element of the comprehensive plan, a “[p]edestrian and bicycle component to include collaborative efforts to identify and designate planned improvements for pedestrian and bicycle facilities

statute, for example, requires cities with more than 50,000 people to prepare a bicycling element.<sup>61</sup> Nevada's enabling legislation supports planning for mass transit, bicycle and pedestrian infrastructure.<sup>62</sup> Florida's enabling statute is unique, however, in directly stating that the traffic circulation element should "incorporate transportation strategies to address reduction in greenhouse gas emissions from the transportation sector."<sup>63</sup>

## 5. Comprehensive Plan Housing Elements

Most state enabling acts include a mandatory housing element, but most do not relate this element to sustainability. Housing plans, however, can play a vital role in sustainability planning by encouraging residential growth in compact urban setting and mixed use housing environments and ensuring that residential buildings are constructed using sustainable methods.<sup>64</sup> Florida has taken a proactive stance regarding sustainability by incorporating it as a component in its comprehensive plan housing element.<sup>65</sup> As part of its 2008 enabling act amendments, Florida now requires housing elements to include discussions of "[e]nergy efficiency in the design and construction of new housing" and the "[u]se of renewable energy resources."<sup>66</sup>

While not as commonly associated with sustainability, the provision of an adequate supply of affordable housing is central to the social equity

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and corridors . . . "); WIS. STAT. § 66.1001(2)(c) (2009) (defining the transportation element as a "compilation of objectives, policies, goals, maps and programs to guide the future development of the various modes of transportation, including . . . transit, . . . bicycles, . . . [and] walking . . .").

<sup>61</sup> ARIZ. REV. STAT. ANN. § 9-461.05(E)(9) (2009).

<sup>62</sup> NEV. REV. STAT. § 278.160(1)(r) (2009) (including an optional transit element that "[s]how[s] a proposed multimodal system of transit lines, including mass transit, streetcar, motor-coach and trolley coach lines, paths for bicycles and pedestrians, satellite parking and related facilities."). *See also* OR. ADMIN. R. 660-012-0020(2) (2009) (requiring transportation system plans to include transit plans and "bicycle and pedestrian plan[s] for a network of bicycle and pedestrian routes throughout the planning area.").

<sup>63</sup> FLA. STAT. ANN. § 163.3177(6)(b) (West Supp. 2009); FLA. ADMIN. CODE ANN. r. 9J-5.019(4)(c)(5)–(6) (2001) (requiring transportation elements to encourage walking and bicycling and to establish "transportation demand management programs" to reduce per capita vehicle miles traveled).

<sup>64</sup> *See* BEATLEY, *supra* note 11, at 76–78, 80–81 (examples of high density urban living communities and mixed housing environments); Sussman, *supra* note 11, at 11–14 (discussing green building statutes).

<sup>65</sup> FLA. STAT. ANN. § 163.3177(6)(f) (West Supp. 2009).

<sup>66</sup> *Id.* § 163.3177(6)(h)–(i).



component of sustainability.<sup>67</sup> Many states' comprehensive planning statutes require planning for affordable housing.<sup>68</sup>

## 6. Comprehensive Plan Elements Related to Climate Change Adaptation

A number of states require local governments to plan for natural hazards such as earthquakes, fires, flooding, and land subsidence. Planning for these types of events is likely to become more important as the effects of climate change continue to alter weather patterns in the coming years, with resultant increases in flooding, droughts, fires, and coastal land erosion.<sup>69</sup>

California's comprehensive plan enabling statute includes a mandatory safety element that must address preparedness for subsidence, flooding, and fires, among other hazards.<sup>70</sup> In regard to flood management, comprehensive plans must identify flood hazard zones and evaluate whether new development should be permitted to occur within them.<sup>71</sup> Florida includes planning for fires, hurricanes, and other natural catastrophes as an optional element in its enabling statute.<sup>72</sup>

<sup>67</sup> See AM. PLANNING ASS'N, POLICY GUIDE ON PLANNING FOR SUSTAINABILITY app. A, § III(D) (2000), available at <http://www.planning.org/policy/guides/adopted/sustainability.htm>. (The American Planning Association recommends that housing policies should meet human needs fairly by providing "[h]ousing that is affordable to a variety of income groups within the same community.").

<sup>68</sup> See, e.g., CAL. GOV'T CODE § 65583(c)(1)(B)(4) (West Supp. 2009); NEV. REV. STAT. § 278.160(1)(e)(2) (2009).

<sup>69</sup> See WILLIAM E. EASTERLING, III ET AL., PEW CTR. ON GLOBAL CLIMATE CHANGE, COPING WITH GLOBAL CLIMATE CHANGE: THE ROLE OF ADAPTATION IN THE U.S. iii–iv (2004), available at <http://www.pewclimate.org/docUploads/Adaptation.pdf> (arguing that adaption to climate change will be important in the future). The report further explains that:

[a]daptation actions and strategies present a complementary approach to mitigation. While mitigation can be viewed as reducing the likelihood of adverse conditions, adaptation can be viewed as reducing the severity of many impacts if adverse conditions prevail . . . the success of adaptation depends critically on the availability of necessary resources, not only financial and natural resources, but also knowledge, technical capability, and institutional resources.

*Id.*; *The Climate Change and the Poor: Adapt or Die*, THE ECONOMIST, Sept. 11, 2008 (explaining that planning for the impacts of climate change has started to become an important part of the international effort to respond to global warming threats).

<sup>70</sup> CAL. GOV'T CODE § 65302(g) (West Supp. 2009).

<sup>71</sup> See *id.*; NEV. REV. STAT. § 278.160(1) (requiring counties with populations larger than 400,000 to include a safety element to identify areas with high risks of flooding, landslides, and fires).

<sup>72</sup> FLA. STAT. ANN. § 163.3177(7)(h) (West Supp. 2009).



Many states also include elements relating to water supplies and conservation-issues that will become more important in many states due to decreased rainfall and winter snowpack.<sup>73</sup> In Arizona, for example, cities and counties must include in their comprehensive plans a water resources element that addresses:

(a) The known legally and physically available surface water, groundwater and effluent supplies. (b) The demand for water that will result from future growth projected in the county plan, added to existing uses. (c) An analysis of how the demand for water that will result from future growth . . . will be served by the water supplies identified in subdivision (a) of this paragraph or a plan to obtain additional necessary water supplies.<sup>74</sup>

Even Pennsylvania and Maryland, states not usually associated with drought,<sup>75</sup> have water conservation elements. The Pennsylvania statute requires that the element be consistent with the state water plan, explaining that it should “include a plan for the reliable supply of water, considering current and future water resources availability, uses and limitations, including provisions adequate to protect water supply sources.”<sup>76</sup> Maryland’s mandatory water resources element, in addition to addressing potable water supplies, must also address stormwater management strategies.<sup>77</sup>

While the states have not yet tailored their natural disaster and water conservation elements to reflect the need to plan for climate changes,

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<sup>73</sup> Nicholas K. Geranios, *Climate Change Cutting Wash. Cascade Snowpack*, SEATTLE TIMES, May 12, 2009, available at [http://jisao.washington.edu/print/news/SeattleTimes\\_5-12-09\\_ClimateChangeCuttingCascadeSnowpack.pdf](http://jisao.washington.edu/print/news/SeattleTimes_5-12-09_ClimateChangeCuttingCascadeSnowpack.pdf); Marc Kaufman, *Decline in Snowpack is Blamed on Warming*, WASHINGTON POST, Feb. 1, 2008, available at <http://www.washingtonpost.com/wp-dyn/content/article/2008/01/31/AR2008013101868.html>; U.S. Environmental Protection Agency, *Future Precipitation and Storm Changes*, <http://www.epa.gov/climatechange/science/futurepsc.html> (last visited Oct. 28, 2009); *Geophysical Fluid Dynamics Laboratory Climate Modeling Research Highlights*, NAT’L OCEAN AND ATMOSPHERIC ADMIN., Feb. 2007, at 1, available at [http://www.epa.gov/climatechange/downloads/GFDLhighlight\\_Vol1N5.pdf](http://www.epa.gov/climatechange/downloads/GFDLhighlight_Vol1N5.pdf).

<sup>74</sup> ARIZ. REV. STAT. ANN. § 9-461.05(D)(5) (2009) (cities); ARIZ. REV. STAT. ANN. § 11-821(c)(3) (2009) (counties). See also COLO. REV. STAT. § 30-28-106(3)(iv) (2008); FLA. STAT. ANN. § 163.3177(6)(c) (West Supp. 2009).

<sup>75</sup> See NAT’L CLIMATIC DATA CTR., CLIMATE OF PENNSYLVANIA, available at [http://climate.met.psu.edu/data/ncdc\\_pa.pdf](http://climate.met.psu.edu/data/ncdc_pa.pdf); NAT’L CLIMATIC DATA CTR., CLIMATE OF MARYLAND, available at [http://cdo.ncdc.noaa.gov/climate\\_normals/clim60/states/Clim\\_MD\\_01.pdf](http://cdo.ncdc.noaa.gov/climate_normals/clim60/states/Clim_MD_01.pdf).

<sup>76</sup> 53 PA. CONS. STAT. ANN. § 10301(b) (West. 2001).

<sup>77</sup> MD. ANN. CODE art. 66b, § 3.05(a)(4)(vi) (2009).

some states have developed separate climate change action plans that discuss adaptation strategies. These states have recognized that even with mitigation efforts, climate change is still likely to have negative impacts on human populations and natural environments.<sup>78</sup> Most of these adaptation plans are still being developed, with preliminary recommendations focusing on further study and the appointment of climate change adaptation commissions.<sup>79</sup> As the strategies that are needed to cope with global warming develop and become clearer, it is likely that these concerns will be included in comprehensive plan enabling acts with greater specificity.

### *B. Comprehensive Plan Examples*

Increasingly, with or without guidance from state enabling acts, local comprehensive plans are attempting to respond to the threats of climate change by incorporating plans to conserve important environmental resources, reduce greenhouse gas emissions and prepare for changing

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<sup>78</sup> See, e.g., ARK. GOVERNOR'S COMM'N ON GLOBAL WARMING, FINAL REPORT EX-16 to EX-17 (2008), available at <http://www.arclimatechange.us/ewebeditpro/items/O94F20339.pdf>; ARIZ. CLIMATE CHANGE ADVISORY GROUP, CLIMATE CHANGE ACTION PLAN 25–28, 43 (2006), available at <http://www.azclimatechange.gov/download/O40F9347.pdf>; CAL. CLIMATE CHANGE CTR., THE FUTURE IS NOW: AN UPDATE ON CLIMATE CHANGE SCIENCE, IMPACTS, AND RESPONSE OPTIONS FOR CALIFORNIA 1, 9–11 (2008), available at <http://www.energy.ca.gov/2008publications/CEC-500-2008-077/CEC-500-2008-077.PDF>; Governor Bill Ritter, Jr., COLORADO CLIMATE ACTION PLAN: A STRATEGY TO ADDRESS GLOBAL WARMING 7, 26–28 (2007), available at <http://www.cdphe.state.co.us/ic/ColoradoClimateActionPlan.pdf>; CTR. FOR CLIMATE STRATEGIES, FLORIDA'S ENERGY AND CLIMATE CHANGE ACTION PLAN 8-1 to 8-7 (2008), available at <http://www.flclimatechange.us/ewebeditpro/items/O12F20128.pdf>; MD. COMM'N ON CLIMATE CHANGE, CLIMATE ACTION PLAN, ch. 5 at 9–13, app. E at 8–9, 23, 41, 66, 70 (2008), available at <http://www.mde.state.md.us/assets/document/Air/ClimateChange/Chapter5.pdf>; CLIMATE ACTION PLAN ADVISORY GROUP, RECOMMENDED MITIGATION OPTIONS FOR CONTROLLING GREENHOUSE GAS EMISSIONS: FINAL REPORT 7-7 to 7-8 (2008), available at <http://www.ncclimatechange.us/ewebeditpro/items/O120F19992.pdf> (North Carolina); GOVERNOR'S ADVISORY GROUP ON GLOBAL WARMING, OREGON STRATEGY FOR GREENHOUSE GAS REDUCTION 39 (2004), available at <http://www.oregon.gov/ENERGY/GBLWRM/docs/GWReport-FInal.pdf>; BLUE RIBBON ADVISORY COUNCIL ON CLIMATE CHANGE, REPORT TO GOVERNOR JON M. HUNTSMAN, JR., § 5 at V-7 (2007), available at [http://www.deq.utah.gov/BRAC\\_Climate/docs/Final\\_Report/Sec-5-BRAC\\_CROSS\\_CUTTING.pdf](http://www.deq.utah.gov/BRAC_Climate/docs/Final_Report/Sec-5-BRAC_CROSS_CUTTING.pdf) (Utah).

<sup>79</sup> ARK. GOVERNOR'S COMM'N ON GLOBAL WARMING, *supra* note 78, at 3–9; ARIZ. CLIMATE CHANGE ADVISORY GROUP, *supra* note 78, at 43; CAL. CLIMATE CHANGE CTR., *supra* note 78, at 10–11; Governor Bill Ritter, Jr., *supra* note 78, at 26–27; CTR. FOR CLIMATE STRATEGIES, *supra* note 78, at 8-3 to 8-7 (Florida); CLIMATE ACTION PLAN ADVISORY GROUP, *supra* note 78, at 7-1 to 7-3 (North Carolina); GOVERNOR'S ADVISORY GROUP ON GLOBAL WARMING, *supra* note 78, at 39; BLUE RIBBON ADVISORY COUNCIL ON CLIMATE CHANGE, *supra* note 78 § 5, at V-7 (Utah).

weather patterns. While sustainability elements appear to be growing more popular, many communities have also been able to update their comprehensive plans through existing elements to include support for compact, mixed-use development, improved transportation options, and energy efficient technologies.<sup>80</sup> To illustrate the variety of approaches being taken by local governments, the following sections will detail some of the sustainability provisions included in recent comprehensive plans.

### 1. Blacksburg, Virginia

The comprehensive plan for Blacksburg, Virginia includes in its environment element a recognition that “[t]he best way to maintain and enhance Blacksburg’s air quality and to conserve resources is to reduce energy use, thus decreasing fuel combustion and air pollutant emissions.”<sup>81</sup> To promote this goal, the plan suggests that the town can make improvements to its transit system, ensure “a reasonably compact development pattern[,]” and continue to expand the town’s pedestrian and bicycle path network.<sup>82</sup> Additionally, the plan explains that energy use can be reduced through improving building efficiency, and it suggests that “land use patterns that include trees, are properly oriented, maximize infill, cluster, and employ mixed-use development can enhance the usage of natural heating and cooling and reduce residents’ transportation energy needs.”<sup>83</sup>

### 2. Boulder County, Colorado

Boulder County added a sustainability element to its comprehensive plan in 2007.<sup>84</sup> The plan provides several definitions of the term “sustainability,” but ultimately concludes that pinpointing one definition is unnecessary.<sup>85</sup> As the plan states:

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<sup>80</sup> See *supra* note 64 and accompanying text (general discussion of mixed use development and green building efforts).

<sup>81</sup> TOWN OF BLACKSBURG, BLACKSBURG 2006–2046 COMPREHENSIVE PLAN ch. Environment at 11 (2006), available at [http://tob.bev.net/comp\\_plan/update/pdf/Environment%20Chapter.pdf](http://tob.bev.net/comp_plan/update/pdf/Environment%20Chapter.pdf) [hereinafter BLACKSBURG 2006–2046].

<sup>82</sup> *Id.*

<sup>83</sup> *Id.*

<sup>84</sup> THE BOULDER COUNTY LAND USE DEPT., THE BOULDER COUNTY COMPREHENSIVE PLAN SUSTAINABILITY ELEMENT: INTRODUCTION, DEFINITION, GOALS & PRACTICES 2–3 (2007), available at <http://www.bouldercounty.org/lu/bccp/pdf/BCCPSustainabilityElement.pdf> [hereinafter BOULDER COUNTY SUSTAINABILITY ELEMENT].

<sup>85</sup> *Id.* at 1.

Sustainability links the issues of environment, economy and social equity together. An action or decision in any one of these areas will have consequences on the others whether anticipated or not. A sustainable community is one where an agreement has been reached on the design and implementation of plans that replace competition between issues with collaboration and forethought about achieving desired outcomes in the present while preserving options for those that will follow.<sup>86</sup>

Boulder County's sustainability element also makes clear that although it is intended to embody long term planning goals, it is not static, and it will be modified as the needs and desires of the community change.<sup>87</sup>

At the time of the plan's adoption, the scope of the sustainability element had already been the subject of a joint session between the planning commission, the county commissioners, and the land use department.<sup>88</sup> These entities agreed that the element, at least at first, would concentrate on "(a) an expanded transferable development rights (TDR) program; (b) assessing possible structure size limitations and mitigating measures that would be appropriate for exceeding them; and (c) developing green building policies to shape the drafting of new codes and regulations."<sup>89</sup> The plan recognizes that although the element does not cover all of the issues important to achieving sustainability, it should be viewed as a placeholder.<sup>90</sup> These topics and plans for them can be included, "as they are identified, agreed to, and developed through a public process."<sup>91</sup>

### 3. Buffalo, New York

Buffalo's comprehensive plan recognizes that the city faces many challenges caused by global warming and environmental degradation. In response, Buffalo has sought to address these issues through a sustainability framework.<sup>92</sup> As the plan explains:

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<sup>86</sup> *Id.*

<sup>87</sup> *Id.* at 2.

<sup>88</sup> *Id.* at 3.

<sup>89</sup> *Id.*

<sup>90</sup> BOULDER COUNTY SUSTAINABILITY ELEMENT, *supra* note 84, at 3.

<sup>91</sup> *Id.*

<sup>92</sup> See CITY OF BUFFALO, BUFFALO'S COMPREHENSIVE PLAN (2009), available at [http://www.ci.buffalo.ny.us/files/1\\_2\\_1/Mayor/COB\\_Comprehensive\\_Plan/section\\_245923343.html](http://www.ci.buffalo.ny.us/files/1_2_1/Mayor/COB_Comprehensive_Plan/section_245923343.html).

initiatives to be undertaken in the name of sustainability must work to reduce the consumption of energy, land and other non-renewable resources; minimize the waste of materials, water and other limited resources; create livable, healthy and productive environments; and reduce greenhouse gases in order to assist in alleviating the impact of global climate change.<sup>93</sup>

On the issue of climate change and air quality, the plan acknowledges that “[t]he gradual warming of earth’s atmosphere is one of the most serious environmental issues we face worldwide. Like many such issues, however, the global problem has both local causes and remedies. Therefore, the issue of global climate change deserves consideration in Buffalo’s Comprehensive Plan.”<sup>94</sup> The plan also emphasizes how important climate change mitigation policies are, given that Buffalo is likely to experience weather variations, changes in Lake Erie water levels, ecological changes, and impacts on the local economy because of global warming.<sup>95</sup> The plan also includes a section supporting green building, which explains that Buffalo “is in a unique position to use green building techniques as the city restores, preserves and reuses its building stock.”<sup>96</sup>

#### 4. Marin County, California

The 2007 update of the Marin Countywide Plan<sup>97</sup> was developed using a framework for sustainability that focuses on three central themes: environment, the economy, and social equity.<sup>98</sup> These themes are complemented by twelve guiding principles, several of which relate directly to sustainability.<sup>99</sup> Like some of the other comprehensive plans discussed

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<sup>93</sup> *Id.* § 1.5.

<sup>94</sup> *Id.* § 1.5.1.

<sup>95</sup> *Id.* (noting that “there may be drastic changes in store for Buffalo including significant variations in Lake Erie water levels, erratic weather patterns, changes in vegetation and wildlife, and a wide range of other impacts on human health, economy, society and environment.”).

<sup>96</sup> *Id.* § 1.5.9.

<sup>97</sup> See MARIN COUNTY COMMUNITY DEV. AGENCY, MARIN COUNTYWIDE PLAN (2007), available at [http://www.co.marin.ca.us/depts/cd/main/fm/cwpcodes/CWP\\_CD2.pdf](http://www.co.marin.ca.us/depts/cd/main/fm/cwpcodes/CWP_CD2.pdf) [hereinafter MARIN COUNTYWIDE PLAN].

<sup>98</sup> *Id.* at 1-6.

<sup>99</sup> *Id.* at 1-4 to 1-5. The twelve guiding principles are:

1. Link equity, economy, and the environment locally, regionally, and globally. . . .
2. Minimize the use of finite resources, and use all resources



in this article, the Marin County plan includes several definitions of "sustainability" and an explanation of the importance of achieving sustainability within the county in the face of the impacts that will be caused by global warming.<sup>100</sup>

The Marin County plan stands out from other plans in that it has tried to incorporate sustainability provisions throughout the plan, rather than crafting a single sustainability or climate change element. The relationship of the proposed elements to the plan's themes of environment, economy and equity, as well as to the plan's twelve guiding principles, is expressly considered.<sup>101</sup> The plan also puts emphasis on program implementation and benchmarking guidelines, setting out priorities for particular actions and metrics by which to measure success.<sup>102</sup>

The Marin County plan includes dozens of policies and goals relating to sustainability. Some of the more specific strategies relating to climate change include: lowering greenhouse gas emissions by encouraging alternative transportation methods and technologies,<sup>103</sup> protecting forests and other natural carbon sinks,<sup>104</sup> using energy efficient building techniques by emphasizing renewable energy,<sup>105</sup> reducing methane emissions from landfills,<sup>106</sup> encouraging agricultural operations to adopt methane recovery technology,<sup>107</sup> evaluating carbon emissions during the land use approval process,<sup>108</sup> directing development toward existing urban corridors,<sup>109</sup> and

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efficiently and effectively . . . 3. Reduce the use and minimize the release of hazardous materials . . . 4. Reduce greenhouse gas emissions that contribute to global warming . . . 5. Preserve our natural assets . . . 6. Protect our agricultural assets . . . 7. Provide efficient and effective transportation . . . 8. Supply housing affordable to the full range of our members of the workforce and diverse community . . . 9. Foster businesses that create economic, environmental, and social benefits . . . 10. Educate and prepare our workforce and residents . . . 11. Cultivate ethnic, cultural, and socioeconomic diversity . . . 12. Support public health, safety, and social justice.

*Id.*

<sup>100</sup> *Id.* at 1-6 to 1-7.

<sup>101</sup> *See, e.g., id.* at 2-15 to 2-16, 2-46.

<sup>102</sup> *See, e.g., id.* at 2-47 to 2-51.

<sup>103</sup> MARIN COUNTYWIDE PLAN, *supra* note 97, at 2-101 to 2-102.

<sup>104</sup> *Id.* at 2-102, 2-105.

<sup>105</sup> *Id.* at 2-103.

<sup>106</sup> *Id.* at 2-104.

<sup>107</sup> *Id.*

<sup>108</sup> *Id.* at 2-105.

<sup>109</sup> MARIN COUNTYWIDE PLAN, *supra* note 97, at 2-105.

studying and preparing for the impacts of climate change.<sup>110</sup> The plan also expresses support for home occupations and other work arrangements that cut down on commuting needs,<sup>111</sup> streetscape and mixed use designs that make neighborhoods more pedestrian friendly,<sup>112</sup> incentives for green building projects,<sup>113</sup> and xeriscaping.<sup>114</sup>

## 5. Seattle & King County, Washington

Seattle amended its comprehensive plan<sup>115</sup> in 2007 to add a discussion of climate change to its environmental element.<sup>116</sup> The plan now includes emissions reductions targets<sup>117</sup> and it directs new city building projects to be carbon neutral by 2030.<sup>118</sup> Additionally, the plan includes a goal of no net reduction in the city's tree canopy, in order to reduce storm-water runoff, improve air quality, and mitigate the heat island effect.<sup>119</sup>

The comprehensive plan of King County, where Seattle is located, also includes a specific section on the environment.<sup>120</sup> On the issue of climate change, the plan recognizes that climate change must be addressed because of the impacts that it will have on "ecosystems, agriculture, economy, biodiversity, and public health and safety[.]"<sup>121</sup> The plan goes on to warn that a "significant commitment" to adaption and emission reduction is necessary.<sup>122</sup> Recommendations specifically crafted to address climate change and sustainability include suggestions that the county: continue to conduct regular greenhouse gas emissions inventories;<sup>123</sup> review emissions

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<sup>110</sup> *Id.* at 2-106 to 2-107.

<sup>111</sup> *Id.* at 3-23 to 3-24.

<sup>112</sup> *Id.* at 3-57 to 3-60, 3-68 to 3-69.

<sup>113</sup> *Id.* at 3-88, 3-90.

<sup>114</sup> *Id.* at 3-202.

<sup>115</sup> DEPARTMENT OF PLANNING & DEVELOPMENT, CITY OF SEATTLE COMPREHENSIVE PLAN (2009), available at [http://www.cityofseattle.net/DPD/static/Complete%20Plan09\\_Latest\\_Released\\_DPDP016181.pdf](http://www.cityofseattle.net/DPD/static/Complete%20Plan09_Latest_Released_DPDP016181.pdf) [hereinafter SEATTLE COMPREHENSIVE PLAN].

<sup>116</sup> See Seattle, Wash., Ordinance 122610, § 2 (Dec. 21, 2007).

<sup>117</sup> SEATTLE COMPREHENSIVE PLAN, *supra* note 115, at 11.6 (to "reduce admissions of carbon dioxide and other climate changing greenhouse gases in Seattle by 30 percent from 1990 levels by 2024, and by 80 percent from 1990 levels by 2050.").

<sup>118</sup> *Id.* at 11.7.

<sup>119</sup> *Id.*

<sup>120</sup> KING COUNTY, KING COUNTY COMPREHENSIVE PLAN ch. 4 (2008), available at <http://www.kingcounty.gov/property/permits/codes/growth/CompPlan/2008.aspx> [hereinafter KING COUNTY PLAN].

<sup>121</sup> *Id.* at 4-12.

<sup>122</sup> *Id.*

<sup>123</sup> *Id.* at 4-13.

during the State Environmental Policy Act review process;<sup>124</sup> support solar energy through land use policies, building regulations, and incentives;<sup>125</sup> plan for the potentiality of “coastal flooding associated with sea level rise” and incorporate the projected impacts of climate change into updates of “disaster preparedness. . . and land use plans”;<sup>126</sup> and support carbon trading programs.<sup>127</sup> King County, like Seattle, also has an emissions reduction target: to reduce emissions to 80% below 2007 levels by 2050.<sup>128</sup>

## II. STATE AND LOCAL CLIMATE ACTION PLANS<sup>129</sup>

A majority of U.S. states,<sup>130</sup> and a significant number of municipalities<sup>131</sup> are targeting climate change problems by enacting policies and programs. These plans generally start with the completion of a greenhouse gas emissions inventory; then, a realistic emissions reduction target is developed based on this inventory and an analysis of energy savings opportunities.<sup>132</sup> Finally, climate action plans usually recommend strategies and policies to meet stated emissions reductions goals.<sup>133</sup>

Although comprehensive plans and climate action plans incorporate many of the same suggestions, some localities choose to enact both types

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<sup>124</sup> *Id.* at 4-15.

<sup>125</sup> *Id.*

<sup>126</sup> KING COUNTY PLAN, *supra* note 120, at 4-16 to 4-17.

<sup>127</sup> *Id.* at 4-18.

<sup>128</sup> *Id.*

<sup>129</sup> See Patricia Salkin, *Can You Hear Me Up There? Giving Voice to Local Communities Imperative for Achieving Sustainability*, ENVTL & ENERGY L. & POL'Y J. (forthcoming 2009); see also Patricia Salkin, *New York Climate Change Report Card: Improvement Needed for More Effective Leadership and Overall Coordination with Local Government*, 80 UNIV. OF COLO. L. REV. (forthcoming 2009).

<sup>130</sup> See U.S. Environmental Protection Agency, State Planning and Measurement, [http://epa.gov/climatechange/wycd/stateandlocalgov/state\\_planning.html#four](http://epa.gov/climatechange/wycd/stateandlocalgov/state_planning.html#four) (last visited Oct. 28, 2009) (32 states have climate action plans); Pew Center on Global Climate Change, State Legislation from Around the Country, [http://www.pewclimate.org/what\\_s\\_being\\_done/in\\_the\\_states/state\\_legislation.cfm](http://www.pewclimate.org/what_s_being_done/in_the_states/state_legislation.cfm) (last visited Oct. 28, 2009) (for examples of state legislation on climate change initiatives).

<sup>131</sup> See U.S. Environmental Protection Agency, Local Action Plan Recommendations Matrix, <http://yosemite.epa.gov/gw/StatePolicyActions.nsf/matrices/local> (last visited Oct. 28, 2009) (citing 13 specific localities with climate change policies or programs); PEW CTR ON GLOBAL CLIMATE CHANGE, CLIMATE CHANGE 101: LOCAL ACTION 6-7 (2007), available at [http://www.pewcenteronthestates.org/report\\_detail.aspx?id=32936](http://www.pewcenteronthestates.org/report_detail.aspx?id=32936) (200 cities have implemented climate protection programs or policies).

<sup>132</sup> See U.S. Environmental Protection Agency, State Climate Action Plans, [http://www.epa.gov/climatechange/wycd/stateandlocalgov/state\\_action.html](http://www.epa.gov/climatechange/wycd/stateandlocalgov/state_action.html) (last visited Oct. 28, 2009).

<sup>133</sup> *Id.*

of plans. Denver's 2007 climate action plan<sup>134</sup> is an example of a local sustainability plan developed separately from its comprehensive plan.<sup>135</sup> An advisory council prepared the plan through a process that included significant public participation and expert contributions.<sup>136</sup> The plan also includes a set of recommendations for reducing emissions.<sup>137</sup> After finding that the city's initial reduction goal for 2012 was achievable, but would still lead to overall increases in emissions due to population growth, the plan recommends a second target.<sup>138</sup> The plan ultimately seeks to avoid the construction of a new coal power plant and lists 10 specific strategies to achieve that goal by 2012.<sup>139</sup> The climate action plan also contains information about the city's greenhouse gas inventory, which seeks to determine the amount of emissions produced by various sectors of the city,<sup>140</sup> and lists a number of specific policy recommendations for emissions reductions strategies at the regional, state, and federal levels.<sup>141</sup>

Denver's climate action plan also stands out for its accessibility. It is part of a broader public outreach campaign with a website that contains background information on climate change and suggests ways in which community members can get involved.<sup>142</sup> This type of public outreach component to municipal sustainability campaigns, while not universal, is common.<sup>143</sup>

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<sup>134</sup> MAYOR'S GREENPRINT DENVER ADVISORY COUNCIL, CITY OF DENVER CLIMATE ACTION PLAN (2007), available at <http://www.greenprintdenver.org/docs/DenverClimateActionPlan.pdf> [hereinafter DENVER CLIMATE ACTION PLAN].

<sup>135</sup> CITY AND COUNTY OF DENVER, DENVER COMPREHENSIVE PLAN 2000 (2000), available at <http://www.denvergov.org/Portals/650/documents/CompPlan2000.pdf> [hereinafter DENVER COMPREHENSIVE PLAN 2000]. The Comprehensive Plan and the Climate Action Plan share many of the same goals and strategies. Compare DENVER CLIMATE ACTION PLAN, *supra* note 134, at 5–6, with DENVER COMPREHENSIVE PLAN 2000, *supra*, at 39, 41 (both plans discuss promoting green building practices, ensuring the availability of clean alternative transit options, and providing for energy and sustainability incentives).

<sup>136</sup> DENVER CLIMATE ACTION PLAN, *supra* note 134, at intro. (letters).

<sup>137</sup> *Id.* at 17–18.

<sup>138</sup> *Id.* at 4 (25% absolute reduction of emissions by 2020). The original 2012 target was 10% per capita reduction. *Id.*

<sup>139</sup> *Id.* at 5–6 (focusing on incentives, alternative transportation, recycling, efficiency standards, and community outreach).

<sup>140</sup> *Id.* at 11–16.

<sup>141</sup> *Id.* at 19–21.

<sup>142</sup> See Greenprint Denver, Energy & Emissions, <http://www.greenprintdenver.org/energy-emissions/> (last visited Oct. 28, 2009); Greenprint Denver, Get Involved <http://www.greenprintdenver.org/getinvolved/> (last visited Oct. 28, 2009).

<sup>143</sup> See, e.g., Seattle Climate Action Now, <http://seattlecan.org/> (last visited Oct. 28, 2009) (community climate action organization); City of Chicago Climate Action, <http://www>

### III. ADDRESSING EMISSIONS THROUGH ENVIRONMENTAL IMPACT REVIEWS

The federal government and many states have enacted comprehensive environmental review procedures that require government actions and development projects, and some private developments, to consider negative environmental impacts during the planning process.<sup>144</sup> Since the U.S. Supreme Court held in *Massachusetts v. EPA*<sup>145</sup> that greenhouse gases are “air pollutants” subject to regulation under the Clean Air Act,<sup>146</sup> support has grown for policies requiring the impacts of emissions to be analyzed under environmental review statutes.<sup>147</sup>

#### A. *The National Environmental Policy Act*

The federal environmental review statute, the National Environmental Policy Act (“NEPA”), requires federal agencies to assess the direct and indirect environmental impacts of federal actions.<sup>148</sup> Federal agencies are then required to produce a detailed Environmental Impact Statement (“EIS”).<sup>149</sup> Although agencies are required to evaluate mitigation efforts and alternative project plans that would decrease negative environmental effects, NEPA does not necessitate any substantive environmental actions.<sup>150</sup> Even though NEPA would not, therefore, require agencies to include emissions reductions measures in their projects, evaluating emissions during

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.chicagoclimateaction.org/pages/what\_residents\_can\_do/24.php (last visited Oct. 28, 2009) (asking residents to get involved through community challenges and programs).

<sup>144</sup> See National Environmental Policy Act of 1969, 42 U.S.C. §§ 4321–4347 (2006); Joshua Glasglow, *Not in Anyone's Backyard? The Non-Distributive Problem With Environmental Justice*, 13 BUFF. ENVTL. L.J. 69, 86 (2005) (15 states have enacted “little NEPAs”).

<sup>145</sup> *Massachusetts v. EPA*, 549 U.S. 497 (2007).

<sup>146</sup> *Id.* at 532.

<sup>147</sup> See, e.g., *Laidlaw Energy & Envtl., Inc. v. Town of Ellicottville*, 59 A.D.3d 1084, 1084, 873 N.Y.S.2d 814, 814–15 (N.Y. App. Div. 2009) (upholding the denial of a site plan based on a significant increase of air emissions after a review pursuant to the State Environmental Quality Review Act).

<sup>148</sup> 42 U.S.C. § 4332(c) (2006).

<sup>149</sup> *Id.* NEPA clearly requires agencies to be diligent in their duties. *Id.* § 4332 (directing that agencies “to the fullest extent possible” provide an EIS). It was not, however, statutorily apparent how detailed an EIS needed to be until later court interpretations. See *Natural Res. Def. Council v. Morton*, 458 F.2d 827, 838 (D.C. Cir. 1972) (an agency will have provided a detailed enough statement if they have taken a “hard look” at [the] environmental consequences . . . ).

<sup>150</sup> *Robertson v. Methow Valley Citizens Council*, 490 U.S. 322, 350 (1989).



the environmental review process would still require agencies to consider and disclose the effects of projects on climate change.<sup>151</sup>

Legal support for including greenhouse gas emissions in NEPA reviews has existed for some time. In 2003, for example, the District Court for the Southern District of California held that the Department of Energy was required under NEPA to evaluate the effects of carbon dioxide emissions that would be produced by a project to construct power lines from a plant in Mexico to areas in California.<sup>152</sup> Some federal environmental impact statements have, indeed, included evaluations of a project's greenhouse gas emissions.<sup>153</sup> These EISs do not typically provide a lot of analysis and most simply declare that greenhouse gases from the specific project in mind would not have a significant impact on global emissions.<sup>154</sup> Some courts have upheld these simplistic conclusions and held that further analysis of the project's impact on global climate change is not needed.<sup>155</sup>

#### B. *The Massachusetts Environmental Policy Act*

Massachusetts became the first state to officially incorporate climate change impacts into its environmental review procedures<sup>156</sup> when it adopted legislation that directs agencies to "consider reasonably foreseeable climate change impacts, including additional greenhouse gas emissions, and effects, such as predicted sea level rise."<sup>157</sup> Under the state's MEPA

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<sup>151</sup> *Id.* at 350–353 (making a distinction between mandating a particular result and requiring agencies to consider the environmental impacts of their decisions). The court emphasizes this point by arguing that "[i]f the adverse environmental effects of the proposed action are adequately identified and evaluated, the agency is not constrained by NEPA from deciding that other values outweigh the environmental costs." *Id.* at 350.

<sup>152</sup> *Border Power Plant Working Group v. Dep't of Energy*, 260 F.Supp.2d 997, 1028–29 (S.D. Cal. 2003) (finding that greenhouse gas emissions have environmental impacts and, therefore, must be analyzed in an EIS). *See also* *Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1217 (9th Cir. 2008) ("The impact of greenhouse gas emissions on climate change is precisely the kind of cumulative impacts analysis that NEPA requires agencies to conduct.").

<sup>153</sup> Michael B. Gerrard, *Climate Change and the Environmental Impact Review Process*, NAT. RESOURCES & ENV'T, Winter 2008, at 20, 20.

<sup>154</sup> *Id.*

<sup>155</sup> *See, e.g., Audubon Naturalist Soc'y of the Cent. Atlantic States, Inc. v. U.S. Dep't of Transp.*, 524 F.Supp.2d 642, 708–09 (D.Md. 2007) (arguing the government satisfied its NEPA requirements by simply considering potential adverse impacts and cannot be faulted for finding that "no mitigation was needed . . . for the supposed impacts of a single stretch of highway on the global problem of climate change.").

<sup>156</sup> Ken Kimmel & Laurie Burt, *Massachusetts Takes On Climate Change*, 27 UCLA J. ENVT'L. L. & POL'Y 295, 305 (2009).

<sup>157</sup> MASS. GEN. LAWS ANN. ch. 30, § 61 (West Supp. 2009).

Greenhouse Gas Emissions Policy and Protocol,<sup>158</sup> covered projects<sup>159</sup> must submit analyses of projected emissions.<sup>160</sup> Project applicants must also consider mitigation options to the extent feasible, and if more energy efficient options are rejected, applicants must explain why.<sup>161</sup>

C. *The California Environmental Quality Act*

California has enacted legislation requiring the adoption of greenhouse gas emissions mitigation guidelines for the California Environmental Quality Act ("CEQA") review process by 2010.<sup>162</sup> Until then, a technical advisory document has been developed to guide planners and land use officials on emissions analyses.<sup>163</sup> The guidance directs agencies to identify greenhouse gas emissions and consider their impacts on climate change, "when viewed in connection with the effects of past, current, and probable future projects."<sup>164</sup>

The legislation was enacted, in part, in response to efforts of the California Attorney General to make emissions part of the CEQA review process.<sup>165</sup> The Attorney General's office has filed dozens of comment letters relating to the inclusion of greenhouse gas assessments in environmental review documents. In one case, the Attorney General commenced litigation based on San Bernardino County's failure to assess emissions that would be caused by amendments to the county's general plan.<sup>166</sup> A

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<sup>158</sup> EXECUTIVE OFFICE OF ENERGY AND ENVTL. AFFAIRS, MEPA GREENHOUSE GAS EMISSIONS POLICY AND PROTOCOL (2007), available at <http://www.env.state.ma.us/mepa/downloads/RevisedGHGPolicy.pdf>.

<sup>159</sup> The review requirements apply to state actions and to privately-funded projects that require certain environmental permits. *Id.* at 1–2.

<sup>160</sup> *Id.* at 2–5. Direct emissions are typically emissions generated by the proposed activity, such as stack emissions from a plant. *Id.* at 3–4. Indirect emissions are emissions that are residually caused by the project, such as transportation and electricity use associated with running a plant. *Id.*

<sup>161</sup> *Id.* at 6–7.

<sup>162</sup> CAL. PUB. RES. CODE § 21083.05 (West Supp. 2009).

<sup>163</sup> See STATE OF CAL., GOVERNOR'S OFFICE OF PLANNING AND RESEARCH, CEQA AND CLIMATE CHANGE: ADDRESSING CLIMATE CHANGE THROUGH CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) REVIEW (2008), available at <http://www.opr.ca.gov/download.php?dl=ceqa/pdfs/june08-ceqa.pdf>.

<sup>164</sup> *Id.* at 5.

<sup>165</sup> See Henry Stern, *A Necessary Collision: Climate Change, Land Use, and the Limits of A.B. 32*, 35 ECOLOGY L.Q. 611, 632–633 (2008).

<sup>166</sup> Petition for Writ of Mandate at 1, *State v. County of San Bernardino*, No. CIVSS 0700329 (Cal. Super. Ct. May 4, 2007), available at [http://ag.ca.gov/globalwarming/pdf/SanBernardino\\_complaint.pdf](http://ag.ca.gov/globalwarming/pdf/SanBernardino_complaint.pdf).

settlement agreement was reached that commits the county to develop an emissions reduction plan.<sup>167</sup> Other mitigation agreements have been negotiated by the Attorney General in relation to industrial and municipal projects.<sup>168</sup>

*D. The Washington State Environmental Policy Act, King County and Seattle*

In 2007, Seattle became the first city to require local agencies performing environmental reviews to include an assessment of the environmental impacts of a project's emissions.<sup>169</sup> The ordinance drew in part on the Supreme Court's decision in *Massachusetts v. EPA*, where, the ordinance explains, the Supreme Court "determined . . . that greenhouse gases are a form of air pollutant, and that harms associated with climate change are serious and well-recognized."<sup>170</sup> The Seattle ordinance does not permit city agencies to require project changes because of emissions data submitted during the State Environmental Policy Act ("SEPA") review process,<sup>171</sup> but it is a valuable first step in developing a new framework for disclosing and regulating project emissions.

King County, Washington, where Seattle is located, has proposed legislation that would include greenhouse gas emissions as a factor to be considered during the environmental review process.<sup>172</sup> The proposed

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<sup>167</sup> Order Regarding Settlement at 2, *State v. County of San Bernardino*, No. CIVSS 0700329 (Cal. Super. Ct. Aug. 28, 2007), available at [http://ag.ca.gov/cms\\_pdfs/press/2007-08-21\\_San\\_Bernardino\\_settlement\\_agreement.pdf](http://ag.ca.gov/cms_pdfs/press/2007-08-21_San_Bernardino_settlement_agreement.pdf).

<sup>168</sup> See Office of the Attorney General, California Environmental Quality Act, <http://ag.ca.gov/globalwarming/ceqa.php> (last visited Oct. 28, 2009) (for a list of the Attorney General's several mitigation agreements).

<sup>169</sup> Department of Planning and Development, *DPD News: Permit to Evaluate Greenhouse Gas Emissions*, SEATTLE.GOV, Jan. 31, 2008, <http://www.cityofseattle.net/dpd/news/20080131a.asp>; Seattle, Wash., Ordinance 122574 (Dec. 10, 2007).

<sup>170</sup> Seattle, Wash., Ordinance 122574 (Dec. 10, 2007) (specifically citing language from the case); *Massachusetts v. EPA*, 549 U.S. 497, 499, 532 (2007).

<sup>171</sup> Seattle, Wash., Ordinance 122574 (Dec. 10, 2007).

<sup>172</sup> King County, Wash., An Ordinance Relating to Greenhouse Gas Emissions From Projects Subject to the State Environmental Policy Act (pending legislation). The ordinance was officially proposed on February 11, 2009 and is currently in the Physical Environment Committee for approval. Transmittal Letter from Ron Sims, King County Director, to Dow Constantine, Chair, King County Council (Feb. 11, 2009), available at <http://www.kingcounty.gov/exec/news/release/2009/February/11greenhouse.aspx> (click "transmittal letter"); King County Council, Legislation Details, [www.kingcounty.gov/council/committees.aspx](http://www.kingcounty.gov/council/committees.aspx) (click "Metropolitan King City Council," click "Dow Constantine," click "Page 3," click "2009-0116") (last visited Oct. 28, 2009).

ordinance also relies on the climate change analysis in *Massachusetts v. EPA*,<sup>173</sup> and on a 2007 executive order that directed King County agencies to incorporate climate impacts into their environmental reviews.<sup>174</sup> Under the executive order, even without the proposed ordinance, SEPA applicants are required to submit emissions information about their projects to King County agencies.<sup>175</sup>

The proposed ordinance, unlike the executive order, provides county agencies with the standards to deny project applications based on their impacts on emissions and climate change.<sup>176</sup> Under the proposed ordinance, a project applicant would be required to submit an estimate of the emissions that would result from the project, both with and without mitigation measures.<sup>177</sup> The county could make a finding of no adverse impact if the applicant shows that the project would have 15% fewer emissions than it would if it merely complied with applicable laws.<sup>178</sup> Acceptable mitigation measures include using green building techniques, recycling construction debris, including renewable energy sources within the project's plans, using transit oriented design, preserving open space, and incentivizing alternative transportation, among others.<sup>179</sup>

The Washington Department of Ecology has also begun to develop guidance for incorporating climate change concerns into SEPA reviews.<sup>180</sup> Final recommendations for using SEPA to address climate change were issued in a report to the Climate Action Team.<sup>181</sup>

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<sup>173</sup> King County, Wash., An Ordinance Relating to Greenhouse Gas Emissions From Projects Subject to the State Environmental Policy Act § 1(J) (the "federal clean air act applies to greenhouse gas emissions"); *see also* 549 U.S. at 532.

<sup>174</sup> King County, Wash., Executive Order PUT-10, Evaluation of Climate Change Impacts through the State Environmental Policy Act (2007).

<sup>175</sup> *Id.* For example, questions concerning emissions are currently included in the county's SEPA checklist. *See* KING COUNTY, WASH., DEPARTMENT OF DEVELOPMENT AND ENVIRONMENTAL SERVICES, STATE ENVIRONMENTAL POLICY ACT (SEPA) CHECKLIST 5-6, 9 (2007), available at <http://your.kingcounty.gov/ddes/forms/lc-ckl-SEPA.pdf> (questions to help an agency recognize environmental impacts).

<sup>176</sup> King County, Wash., An Ordinance Relating to Greenhouse Gas Emissions From Projects Subject to the State Environmental Policy Act § 1(N).

<sup>177</sup> *Id.* § 2(A)(1).

<sup>178</sup> *Id.* § 2(C).

<sup>179</sup> *Id.* § 4.

<sup>180</sup> Department of Ecology, State of Washington, SEPA and Climate Change, <http://www.ecy.wa.gov/programs/sea/sepa/climatechange/> (last visited Oct. 28, 2009).

<sup>181</sup> *See* DEP'T OF ECOLOGY, STATE OF WASH., STATE ENVIRONMENTAL POLICY ACT IMPLEMENTATION WORKING GROUP, REPORT TO THE CLIMATE ACTION TEAM (2008), available at [http://www.ecy.wa.gov/climatechange/2008CATdocs/TWG/sepa/103008\\_sepa\\_iwg\\_report.pdf](http://www.ecy.wa.gov/climatechange/2008CATdocs/TWG/sepa/103008_sepa_iwg_report.pdf).



### E. *New York Guidance Document*

In 2009, the New York State Department of Environmental Conservation ("DEC") released a *Guide for Assessing Energy Use and Greenhouse Gas Emissions in an Environmental Impact Statement* for comment.<sup>182</sup> The proposed policy provides guidance to the agency when reviewing an EIS relating to climate change.<sup>183</sup> The Department makes it clear, however, that the guide is not only for DEC use, but is available to other New York agencies.<sup>184</sup>

According to the policy, the DEC stipulates that the EIS must quantify both direct and indirect GHG emissions in most cases.<sup>185</sup> The document also provides guidance on how to estimate emissions from waste generation as well as suggests the use of energy modeling software to estimate a building's energy demand.<sup>186</sup> In reviewing total GHG emissions, staff is directed to consider alternatives and mitigation measures.<sup>187</sup> A lengthy list of potential mitigation measures is included by way of example, as well as a listing of other sources of information to help guide the review.<sup>188</sup>

## IV. ADDRESSING SUSTAINABILITY THROUGH ZONING AND OTHER LAND USE REGULATIONS

The reality is, due to control over zoning and other land use controls, local governments may be the most important players when it comes to climate change mitigation. The New York State Department of Environmental Conservation recognized this with the recent publication of a climate smart community pledge.<sup>189</sup> Already adopted by over three dozen municipalities, the pledge commits local governments to addressing climate change through the adoption of energy-friendly policies, emissions

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<sup>182</sup> See New York State Department of Environmental Conservation, Climate Change Guidance Documents, <http://www.dec.ny.gov/regulations/56552.html> (last visited Oct. 28, 2009); N.Y. STATE DEPT OF ENVTL. CONSERVATION, OFFICE OF AIR, ENERGY, AND CLIMATE, GUIDE FOR ASSESSING ENERGY USE AND GREENHOUSE GAS EMISSIONS IN AN ENVIRONMENTAL IMPACT STATEMENT (2009), available at [http://www.dec.ny.gov/docs/administration\\_pdf/eisghpolicy.pdf](http://www.dec.ny.gov/docs/administration_pdf/eisghpolicy.pdf) [hereinafter GUIDE FOR ASSESSING USE AND EMISSION].

<sup>183</sup> *Id.*

<sup>184</sup> *Id.*

<sup>185</sup> GUIDE FOR ASSESSING USE AND EMISSION, *supra* note 182, at 5–6.

<sup>186</sup> *Id.* at 9–10.

<sup>187</sup> *Id.* at 10–11.

<sup>188</sup> *Id.* at 11–14.

<sup>189</sup> New York State Department of Environmental Conversation, Climate Smart Community Pledge, <http://www.dec.ny.gov/energy/53013.html> (last visited Oct. 28, 2009).



reduction goals, and community involvement.<sup>190</sup> The following is a brief discussion regarding a number of land use regulatory techniques that can be used to help communities become more sustainable. Specific discussion of local laws and ordinances designed to promote the use of alternative energy is not included.

#### A. *Cluster Development Regulations*

Cluster developments are development projects where structures are crowded on a small portion of the property, leaving the rest as open space.<sup>191</sup> As opposed to most residential developments, cluster developments help to conserve plots of land, protect ecological diversity, and promote an agricultural use of land.<sup>192</sup> Cluster developments also help reduce greenhouse gas emissions by reducing the need for automobiles in the closely crowded communities.<sup>193</sup> Cluster developments are an important part of sustainable design and should be encouraged.

The most obvious way in which states can encourage the use of clustering is to adopt statutory language authorizing and supporting cluster developments.<sup>194</sup> Colorado's authorizing legislation furthers the preservationist goals of cluster development by specifying the minimum area of the property required to be left as open space.<sup>195</sup> The statutory provisions in Massachusetts and Montana ensure that land left as open space will be legally protected from future development.<sup>196</sup>

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<sup>190</sup> New York State Department of Environmental Conservation, Climate Smart Communities, <http://www.dec.ny.gov/energy/50845.html> (last visited Oct. 28, 2009).

<sup>191</sup> See STATE OF IND., DIRECTING DEVELOPMENT AND GROWTH: CLUSTER DEVELOPMENT 1, available at [http://www.in.gov/indot/div/projects/i69planningtoolbox/\\_pdf/Cluster%20Development.pdf](http://www.in.gov/indot/div/projects/i69planningtoolbox/_pdf/Cluster%20Development.pdf). Cluster developments are sometimes also known as "conservation subdivisions." Southeastern Wisconsin Regional Planning Commission, Conservation Subdivisions, <http://www.sewrpc.org/ca/conservationsubdivisions/> (last visited Oct. 28, 2009). Both terms will be used throughout this section.

<sup>192</sup> *Id.* ("Most current zoning ordinances . . . often encourage developments that exploit the land by fitting the larges [sic] number of lots allowed within the parcel.")

<sup>193</sup> G.S. Kleppel, *Urbanization and Environmental Quality: Implications of Alternative Development Scenarios*, 8 ALB. L. ENVTL. OUTLOOK 37, 56 (2002).

<sup>194</sup> For statutes authorizing cluster developments, see, e.g., CONN. GEN. STAT. §8-25(c) (2009); ME. REV. STAT. ANN. tit. 30-A, § 4326(3-A)(A)(2) (2008); MONT. CODE ANN. § 76-3-102(7) (2005); N.H. REV. STAT. ANN. §674:21(I)(f) (2007); S.C. CODE ANN. §6-29-720(C) (1) (2008); WASH. REV. CODE § 36.70A.177(2)(b) (2009); COLO. REV. STAT. § 30-28-401 (2008).

<sup>195</sup> COLO. REV. STAT. § 30-28-403 (2008) (requiring at least two-thirds of the entire property to be preserved). See also CONN. GEN. STAT. § 8-18 (2009) (requiring one-third be preserved as open space, but allowing municipalities to enact more stringent requirements).

<sup>196</sup> MASS. GEN. LAWS ANN. ch. 40A, § 9 (West Supp. 2009) (requiring open space to either be dedicated to the municipality or to a land trust for the purpose of conserving the property);

At the local level, municipalities should encourage clustering in their comprehensive plans<sup>197</sup> and enact zoning or subdivision regulations for conservation design. Local governments, with the appropriate statutory authorization, can require subdivisions to use clustering,<sup>198</sup> and they can provide incentives such as density bonuses to encourage clustering where it is not required.<sup>199</sup> They should also ensure that the purposes of clustering are met by requiring projects to leave a minimum percentage of the property undeveloped<sup>200</sup> and by requiring legal protection for the undeveloped areas through deed restrictions or conservation easements.<sup>201</sup> Municipalities can also include sustainability measures in their cluster development regulations by encouraging developers to retain natural vegetation instead of using landscaping,<sup>202</sup> and directing them to minimize impacts on natural ecosystems.<sup>203</sup> Clustering regulations can also support energy conservation and the use of renewables by encouraging developers to incorporate such factors as passive solar design and solar access into their plans.<sup>204</sup>

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MONT. CODE ANN. § 76-3-509(2)(c) (2007) (requiring open space to be subject to an irrevocable conservation easement).

<sup>197</sup> See, e.g., CITY OF ANNAPOLIS, ANNAPOLIS COMPREHENSIVE PLAN: FUTURE DEVELOPMENT & URBAN DESIGN 1 (2007), available at [http://www.ci.annapolis.md.us/upload/images/government/depts/pl\\_zon/compplan/UrbDesPap.pdf](http://www.ci.annapolis.md.us/upload/images/government/depts/pl_zon/compplan/UrbDesPap.pdf) ("In all future estate and suburban developments, clustering is recommended for residential development."); BLACKSBURG 2006–2046, *supra* note 81 ch. Environment, at 11 (promoting land use patterns including cluster developments).

<sup>198</sup> See, e.g., *Aludi v. Haddam Planning & Zoning*, No. CV0640046205, 2007 Conn. Super. LEXIS 815, at \*18–20, (March 19, 2007) (holding that Conn. Gen. Stat. § 8-25(C) authorized the town to mandate clustering for subdivisions of more than six plots).

<sup>199</sup> See, e.g., FULTON COUNTY, GA., SUBDIVISION REGULATIONS, ART. VI, § 6.10 (2004); MONT. CODE ANN. § 76-3-509(3)(a)–(b) (2007) (authorizing local governments to provide incentives for cluster developments through expedited permitting and other incentives).

<sup>200</sup> LOUISVILLE, KY., LAND DEVELOPMENT CODE § 7.11.6 (2008); FULTON COUNTY, GA., SUBDIVISION REGULATIONS art. VI, § 6.4 (2004); CHEROKEE COUNTY, GA., ZONING ORDINANCE art. 23, § 23.6-1 (2006); WASCO COUNTY, OR., LAND USE AND DEVELOPMENT CODE § 18.090(A) (2006).

<sup>201</sup> See, e.g., LOUISVILLE, KY., LAND DEVELOPMENT CODE § 7.11.7(A) (2008); FULTON COUNTY, GA., SUBDIVISION REGULATIONS art. VI, § 6.6 (2004); CHEROKEE COUNTY, GA., ZONING ORDINANCE art. 23, § 23.6-9 (2006); WASCO COUNTY, OR., LAND USE AND DEVELOPMENT CODE § 18.090(E)–(G) (2006).

<sup>202</sup> See, e.g., LOUISVILLE, KY., LAND DEVELOPMENT CODE § 7.11.6(C)(6) (2008).

<sup>203</sup> See, e.g., LOUISVILLE, KY., LAND DEVELOPMENT CODE § 7.11.5(C) (2008); Swanzey, N.H., Conservation Residential Subdivision Regulations (Apr. 17, 2008); CHEROKEE COUNTY, GA., ZONING ORDINANCE, art. 23, § 23.2(D) (2006); WASCO COUNTY, OR., LAND USE AND DEVELOPMENT CODE § 18.100(A) (2006).

<sup>204</sup> WASCO COUNTY, OR., LAND USE AND DEVELOPMENT CODE § 18.100(E) (2006).

Several model ordinances for conservation subdivisions have been developed to provide communities with suggestions for improving sustainability through clustering. The Massachusetts Smart Growth Open Space Residential Bylaw, for example, applies to all residential developments of more than four units and recommends minimal soil and vegetation disturbance.<sup>205</sup> The bylaw requires that at least 50% of the land be conserved, and it limits the amount of already undevelopable wetlands that can be used to meet this quota.<sup>206</sup> Additionally, open space is required to be legally protected and grouped in contiguous tracts.<sup>207</sup> Density bonuses of up to 30% are offered, depending on the amount of open space that is preserved and the number of affordable units included in the development.<sup>208</sup> Georgia and Wisconsin have also developed model conservation subdivision regulations.<sup>209</sup>

*B. Mixed Use Development, Traditional Neighborhood Design, and Transit-Oriented Development*

While conventional Euclidean zoning separates residential, commercial, and industrial land uses into discrete districts,<sup>210</sup> mixed use zoning allows compatible uses, such as retail and residential, to be sited within close proximities.<sup>211</sup> Euclidean zoning, combined with the growth of the highway system, played a major role in the development of the United States' suburban way of life because it ensured that residences could be

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<sup>205</sup> EXECUTIVE OFFICE OF ENERGY AND ENVTL. AFFAIRS, SMART GROWTH/SMART ENERGY TOOLKIT: BYLAW 1-2 (2007), available at [http://www.mass.gov/envir/smart\\_growth\\_toolkit/bylaws/OSRD-Bylaw-reg.pdf](http://www.mass.gov/envir/smart_growth_toolkit/bylaws/OSRD-Bylaw-reg.pdf).

<sup>206</sup> *Id.* at 6.

<sup>207</sup> *Id.* at 6-7.

<sup>208</sup> *Id.* at 8-9.

<sup>209</sup> See GA. DEP'T OF CMTY. AFFAIRS, CONSERVATION SUBDIVISION MODEL ORDINANCE, available at [http://www.dca.state.ga.us/intra\\_nonpub/Toolkit/ModelOrdinances/ModConsSubOrd.pdf](http://www.dca.state.ga.us/intra_nonpub/Toolkit/ModelOrdinances/ModConsSubOrd.pdf); UNIV. OF WISC. EXTENSION, MODEL ORDINANCE FOR A CONSERVATION SUBDIVISION (2001), available at [http://www.doa.state.wi.us/dhir/documents/conserv\\_subdiv\\_Model\\_ordinance\\_Feb2001.pdf](http://www.doa.state.wi.us/dhir/documents/conserv_subdiv_Model_ordinance_Feb2001.pdf). See also, AM. PLANNING ASS'N, MODEL LAND-DEVELOPMENT REGULATIONS, MODEL RESIDENTIAL CLUSTER DEVELOPMENT ORDINANCE (2006), available at <http://www.planning.org/research/smartgrowth/pdf/section47.pdf>.

<sup>210</sup> Eliza Hall, *Divide and Sprawl, Decline and Fall: A Comparative Critique of Euclidean Zoning*, 68 U. PITT. L. REV. 915, 923 (2007).

<sup>211</sup> BOSTON METROPOLITAN AREA PLANNING COUNCIL, MIXED USE ZONING: A PLANNER'S GUIDE 2 (2006) available at [http://www.mapc.org/whats\\_new/Regional\\_Record/May2006/Mixed\\_Use\\_Toolkit/Mixed\\_Use\\_Planners\\_Toolkit.pdf](http://www.mapc.org/whats_new/Regional_Record/May2006/Mixed_Use_Toolkit/Mixed_Use_Planners_Toolkit.pdf).

located comfortably away from congested city areas.<sup>212</sup> As the suburbs have boomed and transportation improvements have made commuting long distances easier, Euclidean zoning has had the effect, in many places, of making it very impracticable to walk or bicycle from one's home to just about anywhere of interest.<sup>213</sup> The increased number of daily vehicle trips necessary to go to work or school, to go shopping, to go out to eat, or to see a movie have likely had a significant effect on transportation emissions and pollution.<sup>214</sup> The implementation of land use regulations to make cities and suburbs less auto reliant has become an important strategy in the fight against climate change.<sup>215</sup>

Although local governments do not generally need specific statutory authority to create mixed-use zoning districts, many states have acknowledged the benefits of mixed-use zoning in their zoning and planning enabling acts.<sup>216</sup> At the local level, mixed use zoning can take a number of forms. For example, the American Planning Association has created a model mixed use commercial zoning ordinance that promotes the growth of small, ground level commercial uses with residential units located on higher stories.<sup>217</sup> Another type of mixed-use development supports the conversion of underused commercial and industrial buildings into live/work

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<sup>212</sup> Jay Wilkersham, *Jane Jacob's Critique of Zoning: From Euclid to Portland and Beyond*, 28 B.C. ENVTL. AFF. L. REV. 547, 557 (2001) ("Euclidean zoning is one of the great generators of suburban sprawl.").

<sup>213</sup> Kleppel, *supra* note 193, at 47–48 (Euclidean zoning "virtually guarantees that the automobile will be crucial in accomplishing one's daily business.").

<sup>214</sup> Hall, *supra* note 210, at 921–22.

<sup>215</sup> See, e.g., AM. PLANNING ASS'N, POLICY GUIDE ON PLANNING & CLIMATE CHANGE 38 (2008), available at <http://www.planning.org/policy/guides/pdf/climatechange.pdf> ("New policies and regulations should be developed that promote mixed use development, transit-oriented design, and greater development intensity to create communities with land use patterns with reduced energy consumption, fewer vehicle miles traveled and reduced greenhouse gases."); MARIN COUNTYWIDE PLAN, *supra* note 97, at 3-151 to 3-164 (three goals of the plan focused on alternative transportation and increased pedestrian access); CITY OF CLEVELAND CITY PLANNING COMMISSION, CONNECTING CLEVELAND 2020 CITYWIDE PLAN: SUSTAINABILITY 14, available at <http://planning.city.cleveland.oh.us/cwp/chapterspdf/sus.pdf> (a policy promoting "high-density, mixed-use districts that promote travel by transit, walking, and bicycling.").

<sup>216</sup> See, e.g., 53 PA. CONS. STAT. ANN. §§ 10701-A to 10709-A (West Supp. 2009); CAL. GOV'T CODE § 65088(f)–(h) (West 2009); MASS. GEN. LAWS ANN. ch. 40R, §§ 1–14 (West Supp. 2009); CONN. GEN. STAT. § 8-23(d)(1)(C) (2009); S.C. CODE ANN. § 6-29-720(C)(4) (2008); N.Y. GEN. CITY LAW § 81-f (Consol. 2009).

<sup>217</sup> AM. PLANNING ASS'N, MODEL SMART LAND DEVELOPMENT REGULATIONS, MODEL MIXED-USE ZONING DISTRICT ORDINANCE (2006), available at <http://www.planning.org/research/smartgrowth/pdf/section41.pdf>.



units where business owners and employees can use their buildings jointly for residential, commercial, or manufacturing uses.<sup>218</sup> Marin County, California specifically recommends this policy as a strategy for reducing vehicle use and emissions.<sup>219</sup>

Traditional neighborhood design ("TND") is another type of mixed use development that is essentially a throwback to more conventional neighborhoods by employing smaller homes and lots and pedestrian-friendly designs.<sup>220</sup> The designs have, consequently, been successful in reducing car dependency.<sup>221</sup> Some states have recognized the sustainability advantages of TNDs and enacted corresponding legislation.<sup>222</sup> TND regulations have also been enacted in localities across the country.<sup>223</sup>

Pedestrian oriented development ("POD") has similar objectives. POD emphasizes pedestrian access to commercial and transit centers.<sup>224</sup> Both TND and POD are closely related to form-based zoning, which focuses land use regulations on the physical form of urban and suburban neighborhoods without prescribing uses.<sup>225</sup> Several state and local governments

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<sup>218</sup> See AM. PLANNING ASS'N, MODEL SMART LAND DEVELOPMENT REGULATIONS, MODEL LIVE/WORK ORDINANCE (2006), available at <http://www.planning.org/research/smartgrowth/pdf/section42.pdf>.

<sup>219</sup> MARIN COUNTYWIDE PLAN, *supra* note 97, at 3-23.

<sup>220</sup> Robert Cervero, *Growing Smart by Linking Transportation and Urban Development*, 19 VA. ENVTL. L.J. 357, 364 (2000).

<sup>221</sup> *Id.*

<sup>222</sup> See 53 PA. CONS. STAT. ANN. §§ 10701-A to 10709-A (West Supp. 2009); WIS. STAT. § 66.1027 (2008); VA. CODE ANN. § 15.2-2223.1(A)-(B) (Supp. 2009). Massachusetts and Georgia have also developed model TND ordinances. See EXECUTIVE OFFICE OF ENERGY AND ENVTL. AFFAIRS, SMART GROWTH/SMART ENERGY TOOLKIT BYLAW, MODEL ORDINANCE FOR A TRADITIONAL NEIGHBORHOOD DEVELOPMENT MODEL BYLAW (2007), available at [http://www.mass.gov/envir/smart\\_growth\\_toolkit/bylaws/TND-Bylaw.pdf](http://www.mass.gov/envir/smart_growth_toolkit/bylaws/TND-Bylaw.pdf); GA. DEP'T OF CMTY. AFFAIRS, TRADITIONAL NEIGHBORHOOD DEVELOPMENT (TND) MODEL ORDINANCE AND DESIGN STANDARDS, available at [http://www.dca.state.ga.us/intra\\_nonpub/Toolkit/ModelOrdinances/TND\\_ModOrd.pdf](http://www.dca.state.ga.us/intra_nonpub/Toolkit/ModelOrdinances/TND_ModOrd.pdf).

<sup>223</sup> See, e.g., FORSYTH, GA., FORSYTH ZONING ORDINANCE art. 9 (2006); CITY OF ALBANY, N.Y., CODE ch. 375, art. VII §§ 375-41 to 375-47 (2009); TOWNSHIP OF CRANBERRY, PA., ZONING ORDINANCE § 27-505 (2009).

<sup>224</sup> N.H. DEP'T OF ENVTL. SERVICES, INNOVATIVE LAND USE PLANNING TECHNIQUES HANDBOOK § 3.2 (2008), available at [http://des.nh.gov/organization/divisions/water/wmb/repp/documents/ilupt\\_complete\\_handbook.pdf](http://des.nh.gov/organization/divisions/water/wmb/repp/documents/ilupt_complete_handbook.pdf). Similar to PND schemes, these policies have the ability to reduce car dependency and emissions. *Id.*

<sup>225</sup> Form-Based Codes Institute, Definition of a Form-Based Code (FBCI), <http://www.formbasedcodes.org/definition.html> (last visited Oct. 28, 2009). The cities that "have enacted form-based codes include Sonoma (CA), Petaluma (CA), Columbia Pike (VA), Albuquerque (NM), Tacoma (WA), Ketchum (ID), Chapel Hill (NC), Miami (FL), and Knoxville (TN)." Patricia E. Salkin, *Squaring The Circle On Sprawl: What More Can We*



have also endorsed POD standards and policies.<sup>226</sup> Pedestrian-oriented communities are important because they make “pedestrian and bicycle activity possible, expanding transportation options, contributing to cleaner air, and shrinking our ecological footprint.”<sup>227</sup>

Another type of mixed use development that seeks to reduce automobile reliance is Transit Oriented Development (“TOD”), which generally encourages increased density in areas close to transportation hubs.<sup>228</sup> The goal of transit oriented development is to encourage urban, mixed-use development in transit corridors and provide residents with walking access to mass transit and nearby points of interest.<sup>229</sup> With destinations easily accessible by foot or via mass transit, air pollution and energy consumption are reduced.<sup>230</sup> Additionally, because transit oriented development focuses on compact designs, natural resources and ecosystems can also be preserved as open space.<sup>231</sup> Several municipalities and states have signed on to TOD policies.<sup>232</sup> Because TOD endorses both conservation and environmental goals, it should be encouraged.

Municipalities can use existing planned unit development or overlay district zoning regulations to permit these various types of mixed use

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*Do? Progress Toward Sustainable Land Use In The States*, 16 WIDENER L. SYMP. J. 787, 834 n. 226 (2007).

<sup>226</sup> Metropolitan Government of Nashville & Davidson County, TN., Planning Department, Subdivision Regulations ch. 5 (Apr. 27, 2006) (intending to encourage walking by requiring street connectivity, smaller block sizes, and minimum sidewalk widths); HILLSBORO, OR., SUBDIVISION ORDINANCE No. 2808 art. 2, §§ 8–9 (2007) (promoting pedestrian-friendly designs and accesses); CLEVELAND, OH., ZONING CODE ORDINANCES ch. 373, §343.23 (2009); MARIN COUNTYWIDE PLAN, *supra* note 97, at 3-68 to 3-70 (a goal to promote pedestrian-oriented designs).

<sup>227</sup> MARIN COUNTYWIDE PLAN, *supra* note 97, at 3-68.

<sup>228</sup> Marya Morris, *Smart Communities: Zoning for Transit-Oriented Development*, CAMPAIGN FOR SENSIBLE GROWTH, Nov. 2002, at 1, available at <http://www.growingsensibly.org/cmapdfs/i@wv2n4.pdf>.

<sup>229</sup> *See id.*

<sup>230</sup> CAL. DEP'T OF TRANSP., STATEWIDE TRANSIT-ORIENTED DEVELOPMENT STUDY: FACTORS FOR SUCCESS IN CALIFORNIA 4–5 (2008), available at <http://transitorienteddevelopment.dot.ca.gov/PDFs/TOD%20Study%20Executive%20Summary.pdf>.

<sup>231</sup> *Id.* at 5.

<sup>232</sup> TOD has been authorized in California and North Carolina. Transit Village Development Planning Act of 1994, CAL. GOV'T CODE §§ 65460–65460.11 (West 2001 & Supp. 2009); N.C. GEN. STAT. § 160A-536 (2008). Many other states have enacted provisions in their land use and planning statutes supporting TOD. *See, e.g.*, 73 PA. CONS. STAT. ANN. § 850.102(2)(ii) (West 2008); CONN. GEN. STAT. 8-23(d)(1)(F) (2009); NEV. REV. STAT. § 278.0274 (2009). Transit-oriented development has been widely adopted at the local level. *See, e.g.*, ABINGTON, MASS., CODE CH. 175, § 175-37 (2009); NASHUA, NH., ORD. no. O-04-19 § 190-30 (2004); VANCOUVER, WA., MUNICIPAL CODE § 20.550.010 (2009).

zoning, or they can create specific mixed-use zoning districts. Many local governments have also created incentives for developers to use mixed use zoning techniques including the use of density bonuses, fee reductions or waivers, or tax abatements.<sup>233</sup>

C. *Transfer of Development Rights Programs and Purchase of Development Rights Programs*

Transfer of Development Rights ("TDR") programs transfer the developmental rights from an underpopulated area to a high-density area.<sup>234</sup> TDRs are important land use regulations because they promote sustainability by preserving open spaces and promoting new growth in already developed areas over undeveloped areas.<sup>235</sup> After development rights are successfully transferred from undeveloped parcels to properties located in urban areas targeted for increased density, a permanent easement or deed restriction is placed on the undeveloped property to prohibit future development.<sup>236</sup>

A number of state and local governments have cited TDR programs as a useful tool for addressing the causes of climate change.<sup>237</sup> As the Washington Land Use and Climate Change Advisory Committee explained, "[e]ncouraging more focused compact development in urban growth

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<sup>233</sup> See, e.g., STATE OF OR., THE OREGON TRANSPORTATION AND GROWTH MANAGEMENT (TGM) PROGRAM, COMMERCIAL AND MIXED-USE DEVELOPMENT: CODE HANDBOOK 15–16, available at <http://egov.oregon.gov/LCD/docs/publications/commmixedusecode.pdf>; VANCOUVER, WA., MUNICIPAL CODE § 20.550.050 (2009).

<sup>234</sup> MARGARET WALLS & VIRGINIA MCCONNELL, TRANSFER OF DEVELOPMENT RIGHTS IN U.S. COMMUNITIES: EVALUATION PROGRAM DESIGN, IMPLEMENTATION, AND OUTCOMES 8 (Resources for Future 2007), available at [http://www.rff.org/RFF/Documents/Walls\\_McConnell\\_Sep\\_07\\_TDR\\_Report.pdf](http://www.rff.org/RFF/Documents/Walls_McConnell_Sep_07_TDR_Report.pdf); Jason Hanly-Forde et al., *Transfer of Development Rights Programs: Using the Market for Compensation and Preservation*, CORNELL UNIV., <http://government.cce.cornell.edu/doc/html/Transfer%20of%20Development%20Rights%20Programs.htm> (last visited Oct. 28, 2009).

<sup>235</sup> Patricia E. Salkin & Amy Lavine, *Land Use Law and Active Living: Opportunities for States to Assume a Leadership Role in Promoting and Incentivizing Local Options*, 5 RUTGERS J.L. & PUB. POL'Y 317, 353 (2008); Hanly-Forde et al., *supra* note 234 (TDRs strive to preserve open space).

<sup>236</sup> WALLS & MCCONNELL, *supra* note 234, at 8.

<sup>237</sup> See, e.g., MARIN COUNTYWIDE PLAN, *supra* note 97, at 2-127, 2-157, 2-162, 3-21, and 3-29; BOULDER COUNTY SUSTAINABILITY ELEMENT, *supra* note 84, at 7–9 (2007). Massachusetts also has a model ordinance relating to TDRs. EXECUTIVE OFFICE OF ENERGY AND ENVTL. AFFAIRS, SMART GROWTH/SMART ENERGY TOOLKIT BYLAW, MODEL ORDINANCE FOR A TRANSFER OF DEVELOPMENTAL RIGHTS MODEL BYLAW (2007), available at [http://www.mass.gov/envir/smart\\_growth\\_toolkit/bylaws/TDR-Bylaw.pdf](http://www.mass.gov/envir/smart_growth_toolkit/bylaws/TDR-Bylaw.pdf).

areas will result in a reduction of greenhouse gas emissions, a reduction in per capita vehicle miles traveled, help to reduce our state's dependence on foreign oil, and help to conserve resource lands."<sup>238</sup>

## V. ADDRESSING SUSTAINABILITY THROUGH GREEN BUILDING STANDARDS

In addition to planning for development that is less reliant on automobile travel, state and local governments have been seeking to develop strategies to make the construction, operation, and maintenance of buildings more sustainable.<sup>239</sup> Buildings account for about 40% of greenhouse gas emissions in the United States,<sup>240</sup> making sustainable building an integral part of the country's efforts to reduce the causes of climate change.

### A. LEED and Green Building Rating Systems

The most commonly used system for measuring building sustainability is the Leadership in Energy and Environmental Design rating system, commonly referred to as LEED.<sup>241</sup> LEED is a point-based, green building rating system, developed by the U.S. Green Building Council ("USGBC"),<sup>242</sup> and although it is not the only green building rating system, it is the most widely used.<sup>243</sup> There are currently nine LEED rating systems: new construction, existing buildings, operations and maintenance, commercial interiors, core and shell, schools, retail,

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<sup>238</sup> STATE OF WA. DEP'T OF ECOLOGY, LAND USE & CLIMATE CHANGE ADVISORY COMMITTEE, POTENTIAL RECOMMENDATION: TRANSFER OF DEVELOPMENT RIGHTS 1 (2008), available at [http://www.ecy.wa.gov/climatechange/2008GMAdocs/Concept\\_TDR.pdf](http://www.ecy.wa.gov/climatechange/2008GMAdocs/Concept_TDR.pdf).

<sup>239</sup> Sussman, *supra* note 11, at 8–19; Carl J. Circo, *Using Mandates and Incentives to Promote Sustainable Construction and Green Building Projects in the Private Sector: A Call for More State Land Use Policy Initiatives*, 112 PENN. ST. L. REV. 731, 776 (2008).

<sup>240</sup> See U.S. Environmental Protection Agency, Green Building, Why Build Green?, <http://www.epa.gov/greenbuilding/pubs/whybuild.htm> (last visited Oct. 28, 2009); NAT'L SCI. AND TECH. COUNCIL COMM. ON TECH., REPORT OF THE SUBCOMMITTEE ON BUILDINGS TECHNOLOGY RESEARCH AND DEVELOPMENT, FEDERAL RESEARCH AND DEVELOPMENT AGENDA FOR NET ZERO ENERGY, HIGH-PERFORMANCE GREEN BUILDINGS 5 (2008), available at <http://ostp.gov/galleries/NSTC%20Reports/FederalRDagendaforNetZeroEnergyHighPerformanceGreenBuildings.pdf>.

<sup>241</sup> See U.S. Green Building Council, LEED Rating Systems, <http://www.usgbc.org/DisplayPage.aspx?CMSPageID=222> (last visited Oct. 28, 2009) [hereinafter LEED Rating Systems].

<sup>242</sup> *Id.*

<sup>243</sup> U.S. General Services Administration (GSA), Sustainable Design, [http://www.gsa.gov/Portal/gsa/ep/contentView.do?contentType=GSA\\_BASIC&contentId=24956&noc=T](http://www.gsa.gov/Portal/gsa/ep/contentView.do?contentType=GSA_BASIC&contentId=24956&noc=T) (last visited Oct. 28, 2009).

healthcare, homes, and neighborhood development.<sup>244</sup> Each rating system is tailored to the particular qualities of the type of development that it covers, but they all focus on five primary issues: "sustainable site development, water savings, energy efficiency, materials selection, and indoor environmental quality."<sup>245</sup>

LEED requires all projects to incorporate a few specific sustainable building practices, like erosion controls during construction and construction waste management planning, but the core of the LEED system is its optional, point-based elements.<sup>246</sup> LEED awards points for particular green building techniques or practices used in the design and construction of the project.<sup>247</sup> The number of points earned then correlates to one of the LEED certification levels.<sup>248</sup> Platinum is the highest level, followed by gold, silver, and certified.<sup>249</sup>

The LEED systems have many options to earn points and allows for constructive flexibility while still maintaining a high rating. This is illustrated in the New Construction system which includes 14 possible points for choosing a sustainable site, 5 possible points for water efficient details, 17 possible points for efficient energy and atmospheric components, 13 possible points for use of various recyclable materials and waste management policies, 15 possible points for the control of indoor environmental quality systems, and 5 possible points to encourage innovative designs.<sup>250</sup> In total, there are 69 possible points in the LEED New Construction system.<sup>251</sup> Achieving LEED certification requires obtaining at least 26 points.<sup>252</sup>

The USGBC periodically updates each of its LEED rating systems through a process that involves LEED committees,<sup>253</sup> technical advisory groups, comments by various stakeholders, and opportunities for appeal.<sup>254</sup>

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<sup>244</sup> LEED Rating Systems, *supra* note 241.

<sup>245</sup> *Id.*

<sup>246</sup> U.S. GREEN BLDG. COUNCIL, FREQUENTLY ASKED QUESTIONS: LEED GREEN BUILDING CERTIFICATION SYSTEM 1, *available at* <http://www.cleanwaterfront.net/Files/LEED-FAQ.pdf>.

<sup>247</sup> *Id.*

<sup>248</sup> *Id.*

<sup>249</sup> *Id.*

<sup>250</sup> U.S. GREEN BLDG. COUNCIL, LEED FOR NEW CONSTRUCTION & MAJOR RENOVATIONS 6–7 (2005), *available at* <http://www.usgbc.org/ShowFile.aspx?DocumentID=1095>.

<sup>251</sup> *Id.* at 7.

<sup>252</sup> *Id.* The higher certification levels require more points—silver requires 33 points, gold 39 points, and platinum 52 points. *Id.*

<sup>253</sup> U.S. Green Building Council, LEED Committees, <http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1750> (last visited Oct. 28, 2009).

<sup>254</sup> U.S. Green Building Council, Balloting Policy, <http://www.usgbc.org/DisplayPage.aspx?CMSPageID=137> (last visited Oct. 28, 2009) (approved September 12, 2008).



Limited credits are also available for innovative designs not already recognized by the system, and applicants can submit credit interpretation requests to determine whether their plans satisfy the intent of LEED credit.<sup>255</sup> Although the costs of obtaining LEED certification can be high,<sup>256</sup> the USGBC will refund all certification fees for projects that receive LEED platinum certification.<sup>257</sup>

The LEED rating systems have been very successful, and they have been incorporated into numerous pieces of state and local legislation.<sup>258</sup> But LEED has also been criticized on a number of fronts. Although it is true that there are a variety of ways to earn points, LEED is criticized for not considering differences in climate or other factors between locations.<sup>259</sup> For example, “[b]uildings in desert climates in locations such as Nevada and those in relatively water-rich states such as Louisiana have a maximum of 5 points allocated for water efficiency.”<sup>260</sup> Critics also complain that the ratings and points are determined by a committee that may not consider new scientific or technical approaches.<sup>261</sup> LEED has also been

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<sup>255</sup> U.S. GREEN BLDG. COUNCIL, GUIDANCE ON INNOVATION & DESIGN (ID) CREDITS (2004), available at [http://www.usgbc.org/Docs/LEEDdocs/IDcredit\\_guidance\\_final.pdf](http://www.usgbc.org/Docs/LEEDdocs/IDcredit_guidance_final.pdf); U.S. GREEN BLDG. COUNCIL, GUIDELINES FOR CIR CUSTOMERS (2007), available at <http://www.usgbc.org/ShowFile.aspx?DocumentID=1510>.

<sup>256</sup> In order to receive LEED certification, a developer must first register his project, at a cost of \$150 to \$450 for residential projects and \$450 to \$600 for other types of projects. U.S. Green Building Council, LEED for Homes, <http://www.usgbc.org/DisplayPage.aspx?CMSPageID=147#registration> (last visited Oct. 28, 2009) [hereinafter LEED for Homes]; U.S. Green Building Council, Registration, <http://www.usgbc.org/DisplayPage.aspx?CMSPageID=65> (last visited Oct. 28, 2009); Certification costs for residential projects range from \$225 to \$300 for single family homes and \$0.035 per square foot for USGBC members and \$0.045 for non-members for multi-family homes. LEED for Homes, *supra*. Certification costs for non-residential projects include design and review fees and construction review fees, ranging from \$1,750 to \$22,500, depending on project size and membership status. U.S. Green Building Council, Certification, <http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1497> (last visited Oct. 28, 2009) [hereinafter Green Building Council Certification]. Appeals can also be taken from certification determinations, at a cost of \$500 per credit. *Id.* The complete certification process generally takes about two years. ROB WATSON, GREEN BUILDING IMPACT REPORT 2008 3 (Greener World Media 2008), available at <http://stateofgreenbusiness.com/files/GreenBuildingImpactReport2008.pdf>.

<sup>257</sup> Green Building Council Certification, *supra* note 256. Registration, appeals, and expedited review fees, however, are not refundable. *Id.*

<sup>258</sup> Saulius Mikalonis, *LEED Emerges as a National Standard*, GREENING OF THE GREAT LAKES, [http://www.greeningofthegreatlakes.com/public\\_policy/leed\\_emerging\\_standard.php](http://www.greeningofthegreatlakes.com/public_policy/leed_emerging_standard.php) (last visited Oct. 28, 2009).

<sup>259</sup> Charles J. Kibbert & Kevin Grosskopf, *Envisioning Next Generation Green Buildings*, 23 J. LAND USE & ENVTL. L. 145, 150 (2008).

<sup>260</sup> *Id.*

<sup>261</sup> *Id.*



criticized for being too expensive, encouraging "point-mongering," and failing to recognize important efficiency improvements.<sup>262</sup> Additionally, some critics believe that LEED's green building standards simply do not go far enough in requiring building sustainability.<sup>263</sup>

LEED is not the only green building standard out there. Other green building rating systems include GreenPoint, which is geared toward residential buildings,<sup>264</sup> Green Globes,<sup>265</sup> and various regional modifications of national green building rating systems.<sup>266</sup> The Living Building Challenge, unveiled in 2006, is a modification on the national rating system that includes only mandatory requirements and relies on actual performance measures rather than green building designs.<sup>267</sup> Some of the requirements under the Living Building system include: being built on previously developed land, obtaining 100% of their energy needs from on-site renewables, involving purchases of carbon offsets to account for buildings' carbon footprints, recycling nearly all construction waste, meeting 100% of their water needs by captured precipitation or closed loop water systems, and managing 100% of storm water and building water discharge on-site.<sup>268</sup> Although these systems are not as widely used, they represent other options a builder can go to if they are dissatisfied with LEED.

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<sup>262</sup> Randy Udall & Auden Schendler, *LEED Is Broken; Let's Fix It*, available at [http://www.igreenbuild.com/cd\\_1706.aspx](http://www.igreenbuild.com/cd_1706.aspx).

<sup>263</sup> See Nadav Malin, *Lies, Damn Lies, and . . . (Another Look at LEED Energy Efficiency)*, BUILDINGGREEN BLOG (Sept. 2, 2008, 9:04 PM), <http://www.buildinggreen.com/live/index.cfm/2008/9/2/Lies-Damn-Lies-and-Are-LEED-Buildings-iLessi-Efficient-Than-Regular-Buildings>; Lisa Selin Davis, *Less Than Zero*, PLENTY 23, available at [http://www.plentymag.com/magazine/less\\_than\\_zero.php](http://www.plentymag.com/magazine/less_than_zero.php) (even the platinum rating is not good enough).

One article makes five recommendations for improving the LEED framework: "(1) Integration with local ecosystems, (2) Closed loop materials systems, (3) Maximum use of passive design and renewable energy, (4) Optimized building hydrologic cycles and (5) Full implementation of Indoor Environmental Quality measures." Kibbert & Grosskopf, *supra* note 259, at 151.

<sup>264</sup> See GreenPoint Rated: Your Assurance of a Better Place to Live, <http://www.builditgreen.org/greenpointrated> (last visited Oct. 28, 2009).

<sup>265</sup> Building Environmental Assessments—Welcome, Green Globes, <http://www.greenglobes.com/default.asp> (last visited Oct. 28, 2009).

<sup>266</sup> See, e.g., Build Green New Mexico, <http://www.buildgreennm.com/index.php> (last visited Oct. 28, 2009); CAL. BLDG. STANDARDS COMM'N, 2008 CALIFORNIA GREEN BUILDING STANDARDS CODE (2009), available at [http://www.documents.dgs.ca.gov/bsc/2009/part11\\_2008\\_calgreen\\_code.pdf](http://www.documents.dgs.ca.gov/bsc/2009/part11_2008_calgreen_code.pdf).

<sup>267</sup> CASCADIA REGION GREEN BLDG. COUNCIL, THE LIVING BUILDING CHALLENGE: IN PURSUIT OF TRUE SUSTAINABILITY IN THE BUILT ENVIRONMENT 3–6 (2008), available at <http://www.cascadiagbc.org/lbc/lbc-v1.3.pdf>.

<sup>268</sup> *Id.* at 10–16. There are a total of sixteen prerequisites associated with several environmental categories. *Id.* at 10–19.

*B. Energy Efficiency Requirements*

The Energy Star rating system is a joint venture of the U.S. Department of Environmental Protection and the U.S. Department of Energy.<sup>269</sup> Initially a program labeling efficient computers and monitors, the system has expanded since its creation in 1992, and now covers a full range of appliances, heating and cooling systems, and even newly constructed residential and commercial buildings.<sup>270</sup> The Energy Star system uses a 1-100 scale to rate buildings against national source energy data with a rating of 50 being average and a rating of 75 or higher considered as high performance.<sup>271</sup> Although it is not as widespread as LEED, some state and municipal governments have incorporated Energy Star construction and appliance requirements into their building codes.<sup>272</sup>

*C. State and Local Government Adoption of Green and Energy Efficient Building Standards*

The adoption of green and energy efficient building programs has been facilitated by the early enactment of state and local policies requiring government projects to meet minimum sustainability standards. Legislation and executive orders in a number of states have applied green building and energy efficiency standards to public works and government funded projects,<sup>273</sup> as have initiatives at the local level.<sup>274</sup> These programs have

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<sup>269</sup> History: Energy Star, [http://www.energystar.gov/index.cfm?c=about.ab\\_history](http://www.energystar.gov/index.cfm?c=about.ab_history) (last visited Oct. 28, 2009).

<sup>270</sup> *Id.*

<sup>271</sup> How the Rating System Works: Energy Star, [http://www.energystar.gov/index.cfm?c=evaluate\\_performance.pt\\_neprs\\_learn](http://www.energystar.gov/index.cfm?c=evaluate_performance.pt_neprs_learn) (last visited Oct. 28, 2009).

<sup>272</sup> See, e.g., TOWN OF RIVERHEAD, N.Y., CODE ch. 52, § 52-21 (2008); TOWN OF GREENBURGH, N.Y., CODE ch. 100, § 100-15 (2008); TOWN OF HUNTINGTON, N.Y., CODE ch. 87, §87-55.2 (2008); TOWN OF FAIRVIEW, TX., CODE OF ORDINANCES § 3.10.001 (2008) ("The minimum standard for energy efficiency of single-family residential structures shall be the Environmental Protection Agency's Energy Star designation as it currently exists or may be amended.").

<sup>273</sup> See, e.g., Mich. Exec. Directive No. 2005-4 (2005); Va. Exec. Order No. 48 (2007); Ariz. Exec. Order No. 2005-05 (2005); Cal. Exec. Order No. S-20-04 (2004); Colo. Exec. Order No. D005-05 (2005); Me. Exec. Order No. 8-FY-04/05 (2003); Md. Exec. Order No. 01.01.2001.02 (2001); H.B. 196, 422d General Assem. (Md. 2005); A.B. 3, 71st Assem. (Nev. 2005); N.J. Exec. Order No. 24 (2002); R.I. Exec. Order No. 05-14 (2005); N.M. Exec. Order No. 2006-001 (2006).

<sup>274</sup> See, e.g., ALAMEDA, CAL., COUNTY ADMINISTRATIVE CODE ch. 4.38 (2003); ATLANTA, GA., CITY CODE OF ORDINANCES ch. 75, §§ 75.1-75.25 (2008); Berkeley, Cal., Res. 62,248-N.S.

helped to drive the expansion of green building into the private sector, because "in many markets, governments have the purchasing power to transform the building design and construction industries."<sup>275</sup>

However, green building requirements have not been limited to publicly-funded projects. The California Building Standards Commission has developed a statewide green building code that applies to the "planning, design, operation, construction, replacement, use and occupancy, location, maintenance, removal and demolition of every building or structure" in the state.<sup>276</sup> The green building code was adopted in July of 2008, and it established California as the first state to enact sustainable building standards.<sup>277</sup> The code, which remains voluntary until 2010, sets goals for energy efficiency, water conservation, and reductions in construction waste.<sup>278</sup>

At the local level, green building requirements that apply to private construction are varied. Some apply only to construction projects larger than a certain size,<sup>279</sup> and some are restricted to only particular types of buildings.<sup>280</sup> While the Energy Star and LEED systems are common, some municipalities have chosen to use different rating systems, or to create their own.<sup>281</sup> Some green building regulations also permit developers to

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(Nov. 18, 2003); King County, Wash., Ordinance 15118 (Feb. 7, 2005); Sacramento, Cal, Resolution 2004-751 (Sept. 21, 2004).

<sup>275</sup> Circo, *supra* note 239, at 752.

<sup>276</sup> California Green Building Standards Code, CAL. CODE REGS. tit. 24, pt. 11, § 101.3 (2009), available at [http://www.documents.dgs.ca.gov/bsc/2009/part11\\_2008\\_calgreen\\_code.pdf](http://www.documents.dgs.ca.gov/bsc/2009/part11_2008_calgreen_code.pdf).

<sup>277</sup> Leslie Guevarra, *California Adopts Green Building Code for New Construction*, GREENBIZ.COM, July 17, 2008, <http://www.greenbiz.com/news/2008/07/17/california-adopts-green-building-code-all-new-construction>.

<sup>278</sup> *Id.*

<sup>279</sup> See, e.g., D.C. CODE § 6-1451.02(a-1) (Supp. 2009) (covering nonresidential city projects larger than 10,000 square feet, residential projects larger than 10,000 square feet, and large nonresidential projects undertaken by private lessees of city land); HUNTINGTON, N.Y., CODE § 197-4 (2008) (imposes green building requirements on commercial developments over 4,000 square feet).

<sup>280</sup> See, e.g., CARBONDALE, COLO., MUNICIPAL CODE ch. 15.30, §15.30.020 (2007) (covering only residential construction); Boulder County, Colo., Resolution 2009-77 (June 11, 2009) (covering only residential construction). Cf. L.A., CAL., COUNTY CODE § 22.52.2160 (2009) (covering all building projects unincorporated land, except agricultural accessory structures, projects on registered historic sites, and first time tenant improvements smaller than 10,000 square feet).

<sup>281</sup> City of Santa Monica, Sustainable City Progress Report, [http://www01.smgov.net/epd/scpr/Housing/H5\\_GreenHousing.htm](http://www01.smgov.net/epd/scpr/Housing/H5_GreenHousing.htm) (last visited Oct. 28, 2009) (providing that residential applicants can choose from the LEED Homes, GreenPoint, or Santa Monica checklists while other projects must use the LEED system); CARBONDALE, COLO., MUNICIPAL CODE

meet LEED “equivalents” or to merely comply with LEED guidelines without receiving LEED certification.<sup>282</sup> While this allows for flexibility in the development approval process and lets developers avoid the time and expense required by the LEED certification process, it may obstruct the goals of green building regulations if local regulators do not require strict compliance with LEED criteria.<sup>283</sup>

Many green building codes also impose requirements in addition to meeting LEED or equivalent standards. Carbondale, Colorado, for example, requires single family homes larger than 3,000 square feet to either meet a portion of their energy needs from on-site renewables or provide a payment for off-site mitigation.<sup>284</sup> Residential projects in Carbondale are also required to be built to accommodate the future installation of solar hot water heaters and solar panels.<sup>285</sup> In Santa Monica, California projects must comply with either performance or prescriptive energy code regulations in addition to green building requirements.<sup>286</sup> Santa Monica’s green building ordinance also requires solar water heaters to be installed for certain projects, like swimming pools and car washes.<sup>287</sup> Developments are also subject to landscaping and irrigation requirements, such as a maximum of 20% turfgrass landscaping, prohibitions on invasive plants, minimum spacing requirements for sprinkler heads, and size caps for fountains and decorative water features.<sup>288</sup>

In some cities, green building programs include strong monitoring and enforcement provisions. In Washington, D.C., for example, the city’s success in meeting its requirements under the Green Building Act is monitored by the city’s Green Building Advisory Council, which also provides advice and policy recommendations to the mayor.<sup>289</sup> The Act calls for the requirements applying to privately owned projects to be monitored by

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ch. 15.30, §15.30.020 (2007) (standards enforced by a checklist developed by the town); L.A., CAL., COUNTY CODE § 22.52.216030(D)(1) (2008) (residential projects containing five or more dwellings must meet minimum green building requirements under the LEED, California Green Builder (“CGB”), Green Point Rated (“GPR”), or equivalent rating systems).

<sup>282</sup> Simi Hoque, *LEED Certifi-able v. LEED Certified*, GREENERDESIGN, March 11, 2008, <http://www.greenerdesign.com/blog/2008/03/11/leed-certifi-able-vs-leed-certified>.

<sup>283</sup> *Id.*

<sup>284</sup> CARBONDALE, COLO., MUNICIPAL CODE ch. 15.30, §15.30.040(D) (2007).

<sup>285</sup> CARBONDALE, COLO., MUNICIPAL CODE ch. 15.30, §15.30.130 (2007).

<sup>286</sup> SANTA MONICA, CAL., MUNICIPAL CODE art. 8, § 8.108.060 (2009).

<sup>287</sup> SANTA MONICA, CAL., MUNICIPAL CODE art. 8, § 8.108.040 (2009).

<sup>288</sup> SANTA MONICA, CAL., GREEN BUILDING REQUIREMENTS COMPLIANCE FORM (2009), available at [http://www.smgov.net/uploadedFiles/Departments/OSE/Categories/Green\\_Building/LandscapeComplianceForm.pdf](http://www.smgov.net/uploadedFiles/Departments/OSE/Categories/Green_Building/LandscapeComplianceForm.pdf).

<sup>289</sup> D.C. CODE § 6-1451.09 (Supp. 2009).



either an agency or a consultant selected by the mayor,<sup>290</sup> and the owners of any buildings that do not meet their verification requirements may be required to forfeit performance bonds to the city for deposit in the Green Building Fund.<sup>291</sup> The fund finances staffing and operation costs for plan review, inspections, and monitoring of covered buildings as well as education, training and outreach activities.<sup>292</sup> In many cities, moreover, certificates of occupancy will not be issued unless completed buildings pass compliance inspections.<sup>293</sup>

#### D. *Green Building Incentives*

Incentives for green building have been created in a number of municipalities, as the upfront costs of green building are often perceived as impeding the adoption of more sustainable building practices.<sup>294</sup> Incentives commonly take the form of grants,<sup>295</sup> density or height bonuses,<sup>296</sup> and expedited permit approval.<sup>297</sup>

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<sup>290</sup> D.C. CODE § 6-1451.06.

<sup>291</sup> D.C. CODE § 6-1451.05.

<sup>292</sup> D.C. CODE § 6-1451.07.

<sup>293</sup> CARBONDALE, COLO., MUNICIPAL CODE ch. 15.30, §15.30.060 (2007) (specifying procedures for compliance inspections and providing that a failed inspection will preclude the issuance of a certificate of occupancy); TOWN OF HUNTINGTON, N.Y., CODE § 87-55.2 (2008) (requiring relevant documentation must be submitted in order to obtain a building permit and providing that a certificate of occupancy will not be issued until the completed dwelling passes all of the performance testing requirements).

<sup>294</sup> See GREGORY H. KATS, GREEN BUILDING COSTS AND FINANCIAL BENEFITS 3 (USA for Massachusetts Technology Collaborative 2003), available at <http://www.cap-e.com/ewebeditpro/items/O59F3481.pdf>.

<sup>295</sup> See, e.g., City of Portland Bureau of Planning and Sustainability, Green Investment Fund (GIF), <http://www.portlandonline.com/osd/index.cfm?c=42134> (last visited Oct. 28, 2009); Portland Bureau of Environmental Services, Ecoroof Incentives, <http://www.portlandonline.com/bes/index.cfm?c=48724> (last visited Oct. 28, 2009); Portland Bureau of Environmental Services, Imagine What You Could Do . . . With a Community Watershed Stewardship Grant, <http://www.portlandonline.com/BES/index.cfm?c=43077> (last visited Oct. 28, 2009).

<sup>296</sup> TOWN OF HUNTINGTON, N.Y., CODE § 198-35 (2008) (offering building height incentives for certain industrial projects that meet the LEED Silver rating); Green Building Incentive Program, <http://www.arlingtonva.us/Departments/EnvironmentalServices/epo/EnvironmentalServicesEpoIncentiveProgram.aspx> (density bonuses offered in Arlington, Virginia).

<sup>297</sup> City of San Rafael, Green Building, [www.cityofsanrafael.org/Government/Community\\_Development/Planning/Green\\_Building.htm](http://www.cityofsanrafael.org/Government/Community_Development/Planning/Green_Building.htm) (last visited Oct. 28, 2009) (homes that achieve at least 100 GreenPoints or LEED Gold ratings are eligible for expedited permit processing); CITY OF CHI., GREEN PERMIT PROGRAM, available at <http://www.cityofchicago>



Portland, Oregon runs an annual tour of green homes to promote featured buildings and their developers<sup>298</sup> and publishes a green building guide.<sup>299</sup> In San Rafael, California, homes that achieve at least 100 GreenPoints or LEED Gold ratings are eligible for reimbursement for the cost of the GreenPoint Rater, bronze plaques, and listing on the city's website.<sup>300</sup> In Oakland, California, incentives include free energy efficiency and LEED design assistance and free public promotion of green projects.<sup>301</sup>

Some local governments have also created disincentives for conventional building. In Arlington County, Virginia, for example, projects that do not obtain LEED certification are asked to contribute \$0.03 per square foot to a green building fund that is used for education and outreach.<sup>302</sup> These disincentives also emphasize the local commitment to green building.

## VI. STORMWATER AND LANDSCAPING INITIATIVES

Water efficiency regulations are an integral part of the sustainability paradigm.<sup>303</sup> In areas where the effects of climate change are likely to result in frequent droughts, water conservation efforts are necessary to help prevent the depletion of potable water sources, and areas likely to see more flooding because of climate change may need to implement improved stormwater management practices.<sup>304</sup> Moreover, water conservation also contributes to lowering emissions by reducing demands on water treatment

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.org/webportal/COCWebPortal/COC\_EDITORIAL/GreenPermitBrochure\_1.pdf (permit consultant fees can be waived based on LEED and Chicago Green Home ratings).

<sup>298</sup> City of Portland Bureau of Planning and Sustainability, Annual Build it Green! Home Tour, <http://www.portlandonline.com/bps/index.cfm?c=41893> (last visited Oct. 28, 2009).

<sup>299</sup> CITY OF PORTLAND BUREAU OF PLANNING AND SUSTAINABILITY, GREEN HOME REMODELING GUIDE: DESIGNING AND BUILDING A MORE SUSTAINABLE HOME (2005), available at <http://www.portlandonline.com/shared/cfm/image.cfm?id=122205>.

<sup>300</sup> City of San Rafael, Green Building, [www.cityofsanrafael.org/Government/Community\\_Development/Planning/Green\\_Building.htm](http://www.cityofsanrafael.org/Government/Community_Development/Planning/Green_Building.htm) (last visited Oct. 28, 2009).

<sup>301</sup> City of Oakland Public Works Agency, Environmental Services Division, <http://www.oaklandpw.com/page273.aspx> (last visited Oct. 28, 2009).

<sup>302</sup> ROCKINGHAM PLANNING COMM'N, GREEN BUILDING ORDINANCES: MUNICIPAL EXPERIENCES FROM ACROSS AMERICA 12, available at [http://www.cleanair-coolplanet.org/for\\_communities/PDFs/Green\\_Ord\\_Report.pdf](http://www.cleanair-coolplanet.org/for_communities/PDFs/Green_Ord_Report.pdf).

<sup>303</sup> See Keith H. Hirokawa, *The Relevance of Land Use Law to Climate Change Preparedness: The Case of Sustainable Water Practices*, TRENDS, May/June 2006, available at <http://www.greeleygov.com/Water/Documents/Trends%20Article.pdf>.

<sup>304</sup> See U.S. ENVTL. PROT. AGENCY, NATIONAL WATER PROGRAM STRATEGY: RESPONSE TO CLIMATE CHANGE 11 (2008), available at [http://www.epa.gov/ow/climatechange/docs/TO5\\_DRAFT\\_CCR\\_Revised\\_10-16.pdf](http://www.epa.gov/ow/climatechange/docs/TO5_DRAFT_CCR_Revised_10-16.pdf).

and distribution infrastructure.<sup>305</sup> LEED recognizes the importance of water conservation by providing credits for wastewater management, landscaping, and water use reduction.<sup>306</sup> This section discusses several such water conservation and stormwater management policies.

#### A. *Rainwater Collection Requirements*

An albeit simple, but effective water conservation tool is the collection of rainwater. Collecting rainwater is an excellent method of conserving water and controlling stormwater, but because many western states follow the prior appropriation doctrine for water rights, holders may not be permitted.<sup>307</sup> Amid criticism of the law,<sup>308</sup> Colorado recently passed a bill allowing rainwater collection in very limited circumstances.<sup>309</sup> In Washington, the Department of Ecology is currently working on regulations to define which cisterns and small rainwater collection systems are de minimus and which require administrative approval.<sup>310</sup>

Other states, however, have encouraged widespread rainwater collection. The Texas legislature, for example, created a Rainwater Harvesting Evaluation Committee in 2005 to report on the possible benefits of rainwater collection and make suggestions for future rainwater collection activities in the state.<sup>311</sup> The committee recommended, among other things,

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<sup>305</sup> See U.S. Environmental Protection Agency, WaterSense, Benefits of Water Efficiency, <http://www.epa.gov/watersense/water/benefits.htm> (last visited Oct. 28, 2009) (estimating that retrofitting one percent of American homes with water efficient features would result in a greenhouse gas emissions reduction of 80,000 tons); Daniel Weintraub, Op-Ed, *Rainwater Harvesting: Washington Ahead of California*, SEATTLE POST-INTELLIGENCER, May 29, 2008, available at [http://www.seattlepi.com/opinion/365081\\_wateronline30.html](http://www.seattlepi.com/opinion/365081_wateronline30.html) (claiming that “[w]ater use—from pumping to distribution and treatment—consumes an estimated 20 percent of the electricity generated in California . . .”).

<sup>306</sup> U.S. GREEN BLDG. COUNCIL, LEED FOR NEW CONSTRUCTION & MAJOR RENOVATIONS 24–28 (2005), available at <http://www.usgbc.org/ShowFile.aspx?DocumentID=1095>.

<sup>307</sup> See Peter Friederici, *A Good Idea—If You Can Get Away With It*, HIGH COUNTRY NEWS, Oct. 13, 2008, available at <http://www.hcn.org/issues/40.18/a-good-idea-2013-if-you-can-get-away-with-it>.

<sup>308</sup> See Daniel Fitzgerald, *Can You Own the Rain?*, Denver Post, June 29, 2008, available at [http://www.denverpost.com/headlines/ci\\_9712027](http://www.denverpost.com/headlines/ci_9712027).

<sup>309</sup> S.B. 09-080, 67th Gen. Assem., Reg. Sess. (Col. 2009) (allowing collection only on residential properties, requiring a permit, and restricting how the water is collected and for what purposes).

<sup>310</sup> State of Washington Department of Ecology, Rainwater Collection, Law, Permits and Current Rulemaking, [http://www.ecy.wa.gov/programs/wr/hq/rwh\\_rule.html](http://www.ecy.wa.gov/programs/wr/hq/rwh_rule.html) (last visited Oct. 28, 2009).

<sup>311</sup> See TEXAS RAINWATER HARVESTING EVALUATION COMMITTEE, REPORT TO THE 80TH LEGISLATURE, RAINWATER HARVESTING POTENTIAL AND GUIDELINES FOR TEXAS (2006),

that municipalities should enact ordinances permitting appropriate rainwater collection systems.<sup>312</sup> Texas even goes so far as to void restrictive covenants or deed provisions that prevent owners from using rainwater harvesting systems.<sup>313</sup>

At the local government level, a number of cities and counties have developed rainwater collection requirements for new construction, including Tucson, Arizona<sup>314</sup> and Santa Fe County, New Mexico.<sup>315</sup> Seattle got around Washington's prior appropriation bar to rainwater collection by applying for, and receiving, a permit to harvest rainwater within the city.<sup>316</sup>

### B. *Xeriscaping Requirements*

Xeriscaping is one popular water conservation program employed throughout the country. Xeriscaping is a holistic approach to landscape design that uses planning and design, selection of appropriate plant species, water efficient irrigation techniques, and other sustainable practices to make landscaping more sustainable.<sup>317</sup> Specific benefits include "reduced water use, decreased energy use (less pumping and treatment required), reduced heating and cooling costs because of carefully placed trees, decreased storm water and irrigation runoff, fewer yard wastes, increased habitat for plants and animals, and lower labor and maintenance costs."<sup>318</sup>

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available at <http://www.twdb.state.tx.us/iwt/rainwater/docs/RainwaterCommitteeFinalReport.pdf>.

<sup>312</sup> *Id.* at 3.

<sup>313</sup> TEX. PROP. CODE § 202.007(a) (Vernon 2005) ("A property owners' association may not include or enforce a provision in a dedicatory instrument that prohibits or restricts a property owner from . . . installing rain barrels or a rainwater harvesting system . . ."). *See also* TEX. WATER DEV. BD., THE TEXAS MANUAL ON RAINWATER HARVESTING 41–42 (3d. ed. 2005), available at [http://www.twdb.state.tx.us/publications/reports/RainwaterHarvestingManual\\_3rdedition.pdf](http://www.twdb.state.tx.us/publications/reports/RainwaterHarvestingManual_3rdedition.pdf).

<sup>314</sup> *See* TUCSON, ARIZ., CODE §§ 6-182 to 6-184 (2008) (mandating that all new commercial developments include plans for rain water harvesting, declaring void any future covenant or deed restrictions that would interfere with the installation of rain water harvest equipment, and requiring that each landscaping budget be provided by 50% rainwater); TUCSON, ARIZ., ORDINANCE NO. 10597 (2008) (requiring all new single and double family homes to be built in such a way as to permit installation of gray water reuse equipment).

<sup>315</sup> *See* SANTE FE COUNTY, N.M., ORDINANCE 2003-6 (2003) (requiring development permit applicants to submit a water harvesting plan).

<sup>316</sup> *See* Department of Planning and Development, *DPD News: Seattle Promotes Rainwater Harvesting for Beneficial Use*, SEATTLE.GOV, Apr. 1 2008, <http://www.seattle.gov/dpd/news/20080401a.asp>.

<sup>317</sup> *See* GAYLE WEINSTEIN, XERISCAPE HANDBOOK: A HOW-TO GUIDE TO NATURAL RESOURCE-WISE GARDENING vii–viii (Fulcrum Publishing 1999).

<sup>318</sup> U.S. Environmental Protection Agency, Polluted Runoff (Nonpoint Source Pollution), How to Conserve Water and Use It Effectively, <http://www.epa.gov/owow/NPS/chap3.html>

Florida has enacted legislation supporting xeriscape landscaping techniques and directing its municipalities to consider enacting landscaping provisions to conserve water.<sup>319</sup> The law also prohibits covenants that interfere with the use of xeriscaping.<sup>320</sup> Colorado has also prohibited such covenants,<sup>321</sup> and in Texas, local governments are specifically authorized to adopt xeriscaping ordinances.<sup>322</sup>

The local governments that have adopted xeriscape ordinances are located primarily in the south and southwest. In Florida, they include Hernando County,<sup>323</sup> Sarasota County,<sup>324</sup> and Broward County,<sup>325</sup> and in Texas they include the Town of Fairview,<sup>326</sup> and the City of Corinth.<sup>327</sup> Xeriscaping has also caught on in some northeastern cities. Falmouth, Massachusetts,<sup>328</sup> and Westchester County, New York<sup>329</sup> have enacted measures drawing on xeriscaping principles. The state and local government endorsement of xeriscaping is a step in the right direction for sustainable landscaping procedures.

### C. *Low Impact Development Regulations*

Another sustainable water initiative is low impact development ("LID"). LID seeks to manage stormwater by preserving natural vegetative cover, collecting and draining stormwater on site, and minimizing impervious surfaces.<sup>330</sup> While developed as a tool to manage storm runoff,

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(last visited Oct. 28, 2009). See also Conni Kunzler, *Laws for the Land*, AM. CITY & COUNTY, Oct. 1, 2004, available at [http://americancityandcounty.com/mag/government\\_laws\\_land/](http://americancityandcounty.com/mag/government_laws_land/).

<sup>319</sup> FLA. STAT. ANN. § 166.048(2) (West Supp. 2009) (municipalities should consider requiring xeriscaping); FLA. STAT. ANN. § 373.185(2) (West 2001) (water management districts must encourage local governments to require xeriscaping).

<sup>320</sup> FLA. STAT. ANN. § 166.048(3)(b); FLA. STAT. ANN. § 373.185(3).

<sup>321</sup> COLO. REV. STAT. § 37-60-126 (11)(a) (2008) (these restrictive covenants are against public policy).

<sup>322</sup> TEX. LOCAL GOV. CODE § 580.002 (Vernon Supp. 2008) (any local government can mandate xeriscaping).

<sup>323</sup> Hernando County Landscape Ordinance, HERNANDO COUNTY, FLA., CODE OF ORDINANCES §§ 10-17 to 10-35 (2008).

<sup>324</sup> SARASOTA COUNTY, FLA., CODE OF ORDINANCES § 22-152 (2008).

<sup>325</sup> BROWARD COUNTY, FLA., CODE OF ORDINANCES § 39-75 (2008).

<sup>326</sup> TOWN OF FAIRVIEW, TEX., CODE OF ORDINANCES § 3.10.001(b)-(c) (2008).

<sup>327</sup> CITY OF CORINTH, TEX., CODE OF ORDINANCES ch. 158, §158.01 (2009).

<sup>328</sup> FALMOUTH, MASS., CODE § 240-119 (2008).

<sup>329</sup> WESTCHESTER COUNTY, N.Y., CODE § 693.01 (2008).

<sup>330</sup> U.S. ENVTL. PROT. AGENCY, OFFICE OF WATER, LOW IMPACT DEVELOPMENT: A LITERATURE REVIEW 1 (2000), available at <http://www.epa.gov/owow/nps/lid/lid.pdf>.



LID also advances other sustainability goals by encouraging the preservation of natural habitats and discouraging pavements and other impermeable surfaces that contribute to the heat island effect.<sup>331</sup>

LID policies are utilized in both state and municipalities all over the country. In Southborough, Massachusetts, LID special permits are required for nonresidential projects of more than 2,000 square feet and residential developments of more than five acres.<sup>332</sup> The code directs such LID special permit applications to meet several conservation design principles.<sup>333</sup> LID is encouraged in many other communities across the country, including Hagerstown, Maryland,<sup>334</sup> Wells, Maine,<sup>335</sup> Franklin, New Jersey,<sup>336</sup> Rensselaer, New York,<sup>337</sup> Los Angeles County, California,<sup>338</sup> and Rappahannock County, Virginia.<sup>339</sup>

#### D. Green Roofs and Cool Roofs

Green roofs, sometimes also called eco-roofs, are specially designed rooftop gardens or lawns.<sup>340</sup> They may have deep soils capable of supporting trees and shrubs, known as an intensive greenroof, or they may consist of a shallower layer of growing medium to be used for grass plantings, called an extensive greenroof.<sup>341</sup> Cities across the country have started to install green roofs on public buildings in order to comply with municipal green buildings laws,<sup>342</sup> and environmentally conscious residents and businesses have also begun to use green roofs in place of more traditional roofing systems.<sup>343</sup> As green roofs have become more common, their particular benefits—improved air and water quality, stormwater retention, urban

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<sup>331</sup> *Id.*

<sup>332</sup> TOWN OF SOUTHBOROUGH, MASS., CODE § 174-13.3(A) (2008).

<sup>333</sup> *Id.* § 174-13.3(E).

<sup>334</sup> CITY OF HAGERSTOWN, MD., CODE § 68-29(C)(22)(m)(6) (2008).

<sup>335</sup> TOWN OF WELLS, ME., CODE § 202-12(F)(4)(g) (2008).

<sup>336</sup> TOWNSHIP OF FRANKLIN, N.J., CODE § 330-3 (2008).

<sup>337</sup> CITY OF RENSSELAER, N.Y., CODE § 145-4(C) (2008).

<sup>338</sup> L.A. COUNTY, CAL., CODE §§ 12-84-410 to 12-84-460 (2008).

<sup>339</sup> RAPPAHANNOCK COUNTY, VA., CODE § 145-22 (2008).

<sup>340</sup> Linda Velazquez, *Organic Greenroof Architecture: Sustainable Development for the New Millennium*, ENVTL. QUALITY MGMT., Summer 2005, available at [http://greenroofs.com/pdfs/news-EQM\\_VelazquezPart1.pdf](http://greenroofs.com/pdfs/news-EQM_VelazquezPart1.pdf).

<sup>341</sup> *Id.*

<sup>342</sup> See Lisa Anderson, *Green With Roof Envy; Other Cities Push to Take Chicago's Crown*, CHI. TRIB., Sept. 19, 2008, available at [http://archives.chicagotribune.com/2008/sep/19/business/chi-green\\_roofssep19](http://archives.chicagotribune.com/2008/sep/19/business/chi-green_roofssep19). The city of Chicago has more square footage of greenroofs than any other city in the United States, with its most notable greenroof being City Hall. *Id.*

<sup>343</sup> *Id.*



heat island mitigation, habitat production, improved building efficiency, longer roof life, and even beauty—have begun to stand out,<sup>344</sup> leading some municipalities to develop incentives and requirements for green roofs apart from general green building and stormwater management requirements.<sup>345</sup>

Portland's green roof regulations, for example, cover slope, waterproofing, drainage, growing medium, and vegetation types.<sup>346</sup> In Los Angeles County, green roofs must be installed and maintained according to the manufacturer/vendor's instructions, vegetation must include "self-sustaining plants" that do not require pesticides or fertilizers, and 90% plant coverage must be achieved within two years.<sup>347</sup> In order to be eligible for Philadelphia's green roof tax credit, an applicant has to submit documents laying out the applicant's plans showing the adequacy of the roof's structural components and the existence of safe access to the roof.<sup>348</sup>

Some municipalities have enacted roof reflectivity standards, sometimes called "white roof" or "cool roof" regulations. White roofs are essentially "shiny plasticized white covering[s]" in lieu of the traditional dark shingles.<sup>349</sup> While these standards do not address stormwater runoff, the use of cool roofs decreases the amount of heat absorbed by roofs and therefore reduces cooling costs and energy consumption.<sup>350</sup> According to a 2008 Los Angeles Times article, "a 1,000-square-foot roof—the average size on an American home—offsets 10 metric tons of planet-heating carbon dioxide emissions in the atmosphere if dark-colored shingles or coatings are replaced with white material."<sup>351</sup> The California Energy Commission estimates that roofs having reflective, light-colored surfaces stay up to 60 degrees cooler than dark colored roofs during the summer.<sup>352</sup>

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<sup>344</sup> See Angela Spivey, *Rooftop Gardens a Cool Idea*, 110 ENVTL. HEALTH PERS., Nov. 2002, at A668, A668. See also CHI. DEPT OF ENV'T, CHICAGO'S GREEN ROOFTOPS: A GUIDE TO ROOFTOP GARDENING 4–5 (2001), available at [http://www.artic.edu/webspaces/green\\_initiatives/greenroofs/images/GuidetoRooftopGardening\\_v2.pdf](http://www.artic.edu/webspaces/green_initiatives/greenroofs/images/GuidetoRooftopGardening_v2.pdf).

<sup>345</sup> See David A. Taylor, *Green Roofs, City by City*, 115 ENVTL. HEALTH PERS., June 2007, at A306, A308 to A311. See also Edna Sussman, *supra* note 11, at 15–16.

<sup>346</sup> CITY OF PORTLAND, PORTLAND STORMWATER MANAGEMENT MANUAL ch. 2, 2-38 to 2-39 (2008), available at <http://www.portlandonline.com/shared/cfm/image.cfm?id=202883>.

<sup>347</sup> COUNTY OF LOS ANGELES, LOW IMPACT DEVELOPMENT STANDARDS MANUAL 35–37 (2009), available at [http://planning.lacounty.gov/assets/upl/project/green\\_la-county-lid-manual.pdf](http://planning.lacounty.gov/assets/upl/project/green_la-county-lid-manual.pdf).

<sup>348</sup> PHILA., PA., CODE § 19-2604(8)(b)(2) (2007).

<sup>349</sup> Felicity Barringer, *White Roofs Catch On as Energy Cost Cutters*, N.Y. TIMES, July 29, 2009, available at <http://www.nytimes.com/2009/07/30/science/earth/30degrees.html>.

<sup>350</sup> *Id.*; California Energy Commission, Cool Roofs and Title 24, <http://www.energy.ca.gov/title24/coolroofs/> (last visited Oct. 28, 2009).

<sup>351</sup> Margot Roosevelt, *To Slow Global Warming, Install White Roofs*, L.A. TIMES, Sept. 10, 2008, available at <http://articles.latimes.com/2008/sep/10/local/me-roofs10>.

<sup>352</sup> California Energy Commission, *supra* note 350.

A few states have incorporated cool roof provisions into their building codes. Georgia was the first state to take roof reflectivity levels into account in its building code.<sup>353</sup> Its 1995 regulations allow buildings with cool roofs to use less insulation.<sup>354</sup> Florida also incorporates roof reflectivity measurements into its energy efficiency building standards.<sup>355</sup> Since 2005, California has required commercial buildings with low sloping roofs to have cool roofs.<sup>356</sup> Starting in 2009, the cool roofs provisions will be extended to residential buildings.<sup>357</sup>

There are some examples of local cool roof regulations. At the local level, a 2008 Dallas ordinance will require low-sloping commercial buildings built after October 1, 2009, to meet roofing reflectance standards.<sup>358</sup> Houston has a similar requirement in its commercial energy conservation code.<sup>359</sup> Chicago also sets minimum reflectivity requirements for low and medium sloped roofs in its energy code.<sup>360</sup>

Some local governments, recognizing the environmental and energy benefits of green roofs, offer grants and incentives to help offset the initial construction costs. Cincinnati,<sup>361</sup> Chicago,<sup>362</sup> and Portland<sup>363</sup> offer grants for green roof construction. New York City<sup>364</sup> and Philadelphia<sup>365</sup> also offer

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<sup>353</sup> LISA GARTLAND, *HEAT ISLANDS: UNDERSTANDING AND MITIGATING HEAT IN URBAN AREAS* 174 (Earthscan 2008).

<sup>354</sup> See GA. COMP. R. & REGS. 110-11-1-.03 (2009).

<sup>355</sup> FLA. BUILDING CODE § 13-2C4.2.1.5 (2007); FLA. BUILDING CODE § 13-2C4.3.1.5 (2007).

<sup>356</sup> California Green Building Standards Code, CAL. CODE REGS. tit. 24, pt. 11, § 143(a)(1)(A) (2006).

<sup>357</sup> News Release, California Energy Commission, Energy Commission Approves New Energy Efficient Standards for California Homes and Businesses (Apr. 23, 2008), [http://www.energy.ca.gov/releases/2008\\_releases/2008-04-23\\_2008\\_standards.html](http://www.energy.ca.gov/releases/2008_releases/2008-04-23_2008_standards.html); California Green Building Standards Code, CAL. CODE REGS. tit. 24, pt. 11, § 143(a)(1)(A) (2008).

<sup>358</sup> DALLAS, TX. CODE ch. 53, § 4303.3.4 (2008).

<sup>359</sup> CITY OF HOUSTON, COMMERCIAL ENERGY CONSERVATION CODE § 5.4.3.5 (2008).

<sup>360</sup> CITY OF CHIC., CHICAGO ENERGY CONSERVATION CODE § 18-13-101.5.4.1 (2009); CITY OF CHIC., CHICAGO ENERGY CONSERVATION CODE § 18-13-101.5.4 (2009).

<sup>361</sup> Terry Kinney, *Cincinnati Wants to Lead Green Roof Movement in US*, USA TODAY, Oct. 2, 2008, available at [http://www.usatoday.com/news/nation/2008-10-02-4004170066\\_x.htm](http://www.usatoday.com/news/nation/2008-10-02-4004170066_x.htm).

<sup>362</sup> Press Release, City of Chicago, Chicago Department of the Environment, Mayor Daley Announces New Cool Roof Grant Program (Oct. 10, 2007), <http://egov.cityofchicago.org/city/webportal/home.do> (search "search for:" for "Mayor Daley Announces New Cool Roof Grant Program").

<sup>363</sup> Portland Bureau of Environmental Services, *Ecoroof Incentives, Incentives for Ecoroof Construction in the City of Portland*, <http://www.portlandonline.com/BES/index.cfm?c=48724&> (last visited Oct. 28, 2009).

<sup>364</sup> N.Y. REAL PROP. TAX LAW § 499-bbb (Consol. Supp. 2009).

<sup>365</sup> PHILA., PA., CODE § 19-2604 (8) (2007).

tax credits of up to \$100,000 for green roof construction, and density bonuses are available incentives in Philadelphia<sup>366</sup> and Portland.<sup>367</sup>

Virginia has recently joined the trend to encourage local incentive programs for green roofs. In 2009, Virginia enacted a law authorizing local governments to grant various incentives to promote green roof construction.<sup>368</sup> The incentives could include discounted permit fees, expedited building permit approvals, or reductions in gross receipt taxes.<sup>369</sup> The incentives would apply to both solar and vegetative roofs.<sup>370</sup> It is up to Virginia's local governments now to enact these incentive programs.

## CONCLUSION

Governments and communities across the United States are employing a wide variety of regulatory techniques to address the serious consequences of climate change. It will take everyone working together to continue to find creative and workable strategies that can be successfully implemented to accomplish the goal of slowing global warming. Often referred to as "green" initiatives, sustainable leadership has been building over the last several years in this law and policy arena, providing hope for the future. There is no "one stop shopping" or magic pill to cure the problems that have been created from generations of combined neglect, ignorance, and lack of information. Rather, we can slowly "green" our communities, our country, and our world by, among other things, continuing to adopt the types of programs and initiatives outlined in this article, as well as the ideas generated by my colleagues in the rest of the articles in this symposium.

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<sup>366</sup> PHILA., PA., CODE § 14-1633 (7)(b) (2007).

<sup>367</sup> PORTLAND, OR., CODE § 33.510.210(C)(10) (2008).

<sup>368</sup> VA. CODE ANN. § 58.1-3852(B) (Supp. 2009).

<sup>369</sup> *Id.* § 58.1-3852(C).

<sup>370</sup> *Id.* § 58.1-3852(A). A "solar roof" is a roofing system utilizing renewable energy that generates at least 2.5% of the total electricity bill. *Id.* A "vegetative roof" must have vegetation covering at least 50% of the total roof area and comply with the Virginia Stormwater Management Program's standards for green roofs. *Id.*